

The Electragist

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Association of Electragists
INTERNATIONAL

APRIL, 1927

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The Electragist

(The National Electrical Contractor and The Electrical Contractor-Dealer)

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No. 6

The Electragist Movement

By LAURENCE W. DAVIS,
General Manager, Association of Electragists, Int'l.

THE organization of Electragists is rapidly growing throughout the country. Active state associations of electragists are gaining headway, from Maryland to California and from Florida to the Dakotas. Outstanding local associations of electragists are tackling their district problems and applying remedies that are seeking friendlier relations, better competition and a greater mutual respect of all interests.

The electragist movement is not individual or local. It is the expression of the thinking of the contractor-dealer group in its effort to establish sound principles of business relations. These principles are industry wide and their successful application to local problems depends upon uniform thinking and adoption.

There are five major programs around which electragist associations are organized.

1. Individual business helps
2. Better competition
3. Standards of public service
4. Trade relations
5. Development of electragists' markets.

All of these subjects touch in a greater or less degree the interests of other groups of the industry and to that degree can not be handled by isolated thinking of electragists, either nationally or locally. The interdependence of business groups today demands not only consideration and respect for the

interests of each other, but also the uniform local adoption of national policies.

It is important that the electragist movement be closely tied together through the Association of Electragists, International, and that the A. E. I. should serve as clearing-house for local thinking and uniform policy making. Local activities in this way are kept in progress with industry thinking and the danger avoided of conflicting policies which might reach far beyond the local plans in a reaction against the interests of all electragists.

The A. E. I. as a national organization is in contact with the national organizations and committees of all the other groups. Its executive members sit in council with the following organizations:

National Electric Light Association
National Electric Manufacturers' Association.
Electrical Supply Jobbers' Association
International Association of Electrical Inspectors
Electrical Field Service Committee
Electrical Committee, N. F. P. A.
American Engineering Standards Committee
Electrical Safety Conference
Society for Electrical Development.

The electragist policies and aims are determined by the A. E. I. executive committee, and grow out of a recognition of the interdependence and mutual interests of all groups for greater industry development. The individual

electragist and the local electragist groups in the same way need to contact with other local interests, since without such friendly, mutual contacts between electragists, central stations, jobbers, manufacturers' representatives and electrical inspectors needless misunderstandings and conflicts are engendered.

It is encouraging today to find that such friendly cooperation between groups is rapidly growing. Local code committees, local electrical leagues, representatives of the central station and jobbers invited to sit in local electragists' meetings, etc., are all helping to bring the different interests together in discussion of matters affecting more than one group. Such discussion of questions of mutual interest is more effective than any independent action of an isolated group.

Let us see wherein the electragist programs, around which local electragist associations are organized, contact with other industry groups.

1. Individual Business Helps

It has frequently been said that the electragists are the "firing line" of the industry. Manufacturers' plans for distribution, jobbers' sales, central stations' load building largely focus upon the character of business outlet provided by the contractor-dealer in his daily contact with the consumer. Failure of a contractor means credit losses, lessened customer service and, most serious of all, the demoralization of all

business influenced by that contractor while he goes his way down to failure.

Failures are usually the result of inadequate business equipment, insufficient knowledge of operating costs, lack of system and management, "guess-timating" instead of estimating. Electragist associations need, therefore, to turn their first attention to placing in their members' hands the complete information on these fundamental business helps, which the A. E. I. has developed through many years of group experience.

In a number of cities the cooperation of the local jobbers with the local electragists' association has greatly helped in putting the Standard Accounting System of the A. E. I. into wider use, and every local association should invite the help of the jobber in this activity.

Nationally, the Electrical Supply Jobbers' Association are effectively cooperating in their "Course for Jobbers' Salesmen" on the electragists' problems. In this course are included the forms and systems of the A. E. I., so that the salesmen can more intelligently advise their customers how to obtain and use such helps. Over 1,700 jobbers' salesmen have enrolled for this course to date.

2. Better Competition

No industry can grow as rapidly as this electrical industry without going through a period of overexpansion in numbers of businesses engaged in competition. There are too many manufacturers; consolidations and the absorption of the less efficient ones are needed to effect sound economies through standardization and quantity production. There are too many distributors; too many jobbers are competing for the business of every territory; handling too many makes of the same article for the number of retail outlets available, so that they are forced to create new outlets, set up new contractor-dealers in business, or sell direct to the consumer.

Manufacturing competition has left little or no profit for the manufacturer in many lines today; jobbing competition has forced the distribution margin to a very narrow spread. The correction of these conditions lies only within their respective groups, through consol-

idation, quantity production and centralization of plants and service, with elimination of duplication of selling efforts and wasteful competition. The result will be not only more reasonable profits for manufacturer and distributor, but lower prices to the public as well.

The situation in the electragist field is but little different, though seemingly magnified because of the greater number of contractor-dealers and the ease with which men can enter the business with little investment. There are too many contractor-dealers and the consequent failures of the inefficient become a continual drain upon the industry, demoralize business for the efficient, and increase the cost to the public.

The correction of this condition rests upon the contractor-dealer group, through proper electragist associations, study of conditions and cooperation with other interests involved. It does not lie in artificial restrictions, undue legislative restraints, or arbitrary control. The reduction of wasteful competition and the consequent reduction of overhead costs in the contractor-dealer field is as important for better service and lower costs to the public as in any of the other groups.

Perhaps the time is not yet ripe for actual contractor-dealer consolidations, chain stores or similar reduction of duplication. The local association, therefore, is even more necessary to bring together the many units and through better understanding and mutual respect eliminate wasteful conflict of interests. Membership in the A. E. I. and in his local electragist association is of prime importance to the contractor-dealer who is seeking success in the face of present competition.

The local electragist association should invite in conference the executives and credit managers of the jobbers and discuss, among other things, the cooperative work that can be undertaken toward the installation of proper accounting systems among contractor-dealers, and toward a more definite scrutiny of credit risks by jobbers.

So-called "licensing" legislation, either by municipal ordinance or state law, has been tried in many places in order to lessen the number of irresponsible or incompetent men entering the

profession as contractors. Such legislation should be designed for the protection of the public through adequate examination and registration of contractors as to competency to handle electrical work, and can not be designed to limit competition or to restrict competent contractors from a free entrance into the business or from the conduct of that business wherever they desire. The term "registration" probably more clearly defines this legislation than does the word "licensing."

3. Standards of Public Service

Regulation of the installations of electrical wiring and equipment by municipal ordinances has developed very rapidly during the past few years. The spirit behind these regulations is the safeguarding of public interest through protection from hazard to life and property from inferior wiring or devices. The need for such police regulation is evident where public safety is involved.

The rules governing the questions of safety to life and property are being continuously developed by the industry as a whole through the National Electrical Code and the National Electrical Safety Code. However, these codes have no police powers behind them except as may be given through their adoption as the basis for municipal ordinances or state statutes.

Frequently, however, municipalities have passed ordinances regulating the installation of electrical wiring and appliances and written into those ordinances codes with many special rulings and divergencies from the National Electrical Code, which have been more and more disturbing to the industry because they have prevented standardization of materials and work. In one state today it is necessary for the electrical contractor to look in three separate codes and reconcile the rules of one with the rules of another before he knows how to proceed with his work, since he must satisfy the requirements of his State Electrical Safety Code, his Municipal Electrical Inspection Ordinance, and the Underwriters' rules as represented by the National Electrical Code.

To meet the need for greater uniformity in local installation standards the Uniform Electrical Ordinance was

(Continued on Page 38)

Friendship, Loyalty and Tolerance

By CLYDE L. CHAMBLIN,
President, Association of Electragists, International

In enumerating the objectives of the incoming administration of the Association of Electragists, the new president lays down three principles:

Friendship for one's fellow workers as well as for those engaged in other branches of the industry,

Loyalty on the part of those who earn their living in the industry, and

Tolerance for all other branches of the industry that

The industry may go forward with a united purpose.

ANOTHER turn in the administrative history of our Association has drawn to a close, after two years of outstanding achievement and constructive progress under the able leadership of our retiring president, Joseph A. Fowler. The Executive Committee have reached across the continent for the first time for a president and have selected me to serve you for the ensuing term.

In accepting this position I do so with the full realization of the deep responsibility attendant thereto, for the time has come for very serious consideration of problems that are the natural result of the growth of the industry. In the change in the administration of a national organization, it is only natural that not only the members of that organization, but the industry of which it is a part, should be anxious to know what is to be the policy or objective of such administration.

My hobby is friendly co-operation—not just cold-blooded, heartless co-operation that is only entered into for self-preservation or



Clyde L. Chamblin

selfish gain, but real understanding friendship within the industry, individually and as groups.

Sinister influences from without are at work to undermine the very foundation of this great industry, and this, therefore, is no time for petty bickerings, unfounded suspicions and destructive criticisms within our ranks.

Loyalty is demanded of every individual who earns his bread from this industry, and those who for personal gain will do those things which stir up distrust and ill-will should be brought to realize that such an attitude would destroy their very opportunity for

success. If we can not have confidence within the industry, how can we expect the public to have confidence in it?

An electragist occupies a strategic position in his contact with the public for the creation of either good-will or ill-will, both for his branch of the business and the entire industry of which he is a part. As the final link in the distribution chain he is in constant contact with the public, and his opinion is taken in a large degree as expert and unbiased.

It is one of the chief objects of the Association of Electragists to arouse the contractors of this country to a realization of the possibilities of their position by the dissemination of all the information possible for the proper conduct of their business.

It is our belief that a proper attitude toward competitor, jobber, manufacturer and power company is just as necessary for final success as proper financing or proper management.

We have long heard about educating the contractor, but we believe the whole industry needs an educational program of tolerance and trade loyalty. Let all branches decide that more lasting results will be obtained by friendly conference, with all cards on the table, and the ultimate good of the whole industry as the objective, and nothing in the nature of "Red propaganda" can hurt us.

On the other hand, if any one of the four branches is individually or collectively tearing down sound economic principles, the old adage

of "a house divided against itself will fall" will prevail.

Therefore, the Association of Electragists in this administration dedicates itself to the furtherance of:

Friendship: First between each other and then with all other branches, for we believe that friendship will beget friendship.

Loyalty: Loyal to the industry that provides us with the necessities and comforts of life—and to be loyal means we must be constructive with the public and each other.

Tolerance: Of course we have all made mistakes, but who among us is so free from taint that he may cast the first stone?

If we have unconsciously developed the attitude of carrying a chip on our shoulders, ready to fight instead of counsel, let us develop instead a spirit of open-minded recognition of all the other interests so closely identified with ours.

We are part of one of the noblest professions for serving society, with possibilities which challenge the imagination of the most indifferent.

We welcome the open-door policy that has developed so rapidly in all of the groups of the industry, and the opportunity it affords for the mutual exchange of group thinking and a better understanding of our interdependence. Conflicts of interests undoubtedly exist today, but certainly these can best be adjusted by this spirit of tolerance and respect.



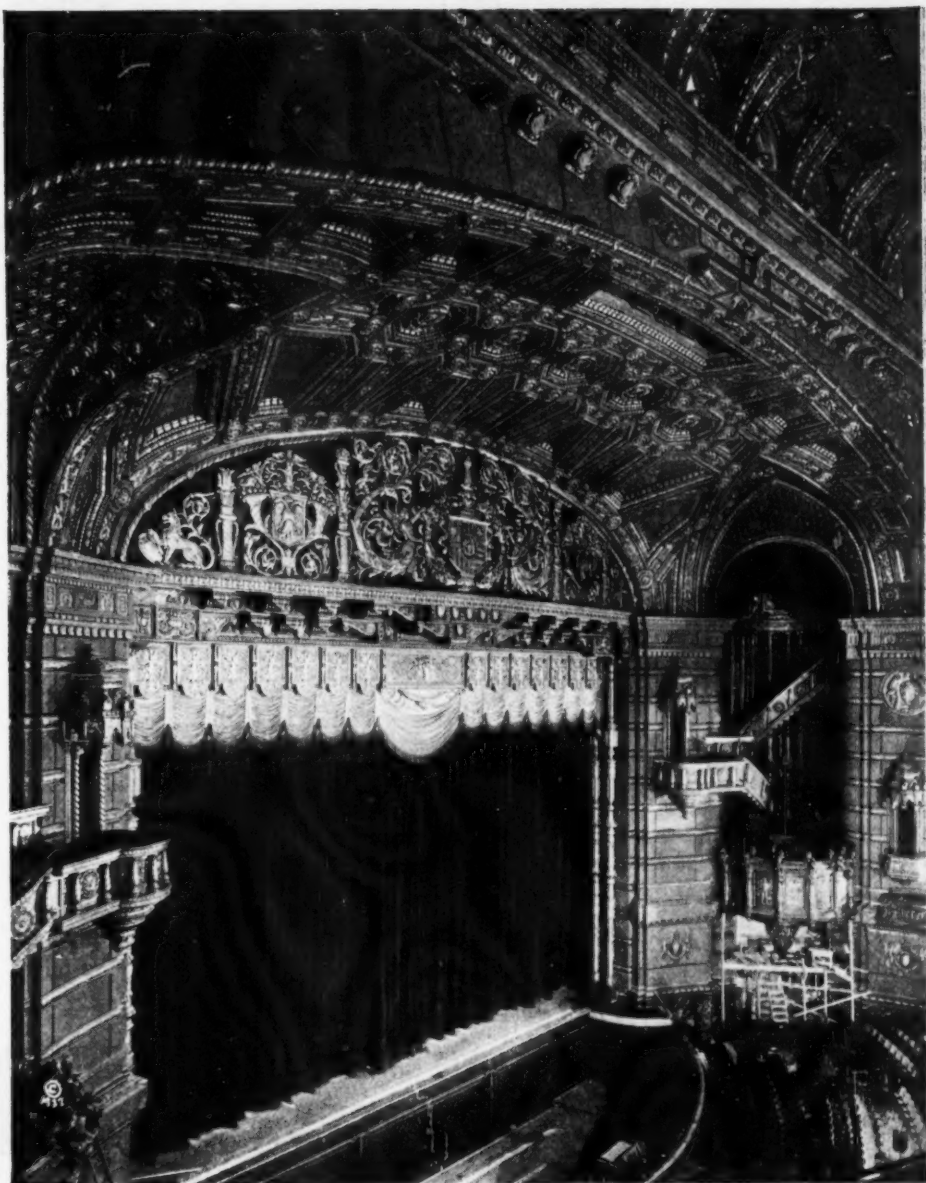
Riverview Club With Its Famous Golf Links and Swimming Pool to be Thrown Open to Those Attending Electragists' Convention in St. Louis Week of August 8

The Electrical Installation in Roxy's New Theatre

IT IS to be expected that the electrical installation in a theatre which is the creation of the master showman, "Roxy," (his real name is S. L. Rothafel) was affected, to no small degree, by the unusual experience and originality of the directing mind. And such is the case. Operations that are at all possible to perform by the application of power have been so treated; the concentration of lighting on the stage is unusual, even for theatres, and the lighting effects in the auditorium are remarkable.

"Roxy" knew what results he wanted, and depended on the architect and various engineers to provide the best means. The architect was Walter W. Ahlslager of Chicago, and the electrical engineer and contractor was Harry Alexander, Inc., New York.

One of the difficulties which often appears on a job is the assignment of spaces for the occupation of electrical equipment and the relation of these spaces to each other. On a large job it is difficult for the architect from his own fund of knowledge to form a conception of the space requirements of electrical apparatus, especially when new types of equipment and special applications are used, and he must of necessity depend on the electrical engineer and contractor to supply this information. The electrical equipment plays so important a part in the proper functioning of the "Roxy" Theatre that it could not be relegated to small out-of-the-way spaces. Space demands are made by all the many interests that make a complete theatre and it is not surprising that they often conflict. Therefore, one of the important duties of the electrical engineer and the elec-



Interior View of New Roxy Theatre

trical contractor is to advise the architect what spaces will be required and the relation they must have to each other. The electrical centers in the Roxy Theatre are the four services, the manager's control board, the stage control board, and the stage contactor board.

The Roxy Theatre is essentially a rectangular building extending between 50th Street and 51st Street, close to 7th Avenue. However, only a rectangular projection to the main portion juts out to the northeast corner of 7th Avenue and 50th Street. This projection is one-story high and is the entrance to

the theatre. The floors above that are part of a new hotel which occupies the 7th Avenue frontage. An enormous grand foyer is located between the entrance, where the ticket offices are located and the auditorium. It has an unobstructed height of 60 feet. The stage is in a unique location, namely in the northeast corner of the building. The 6200 seats are arranged in arcs that have their center in back of the stage. The stage is thus located what in plan appears as the apex of an enormous fan. The height of the auditorium from ground floor to dome is 115 ft.

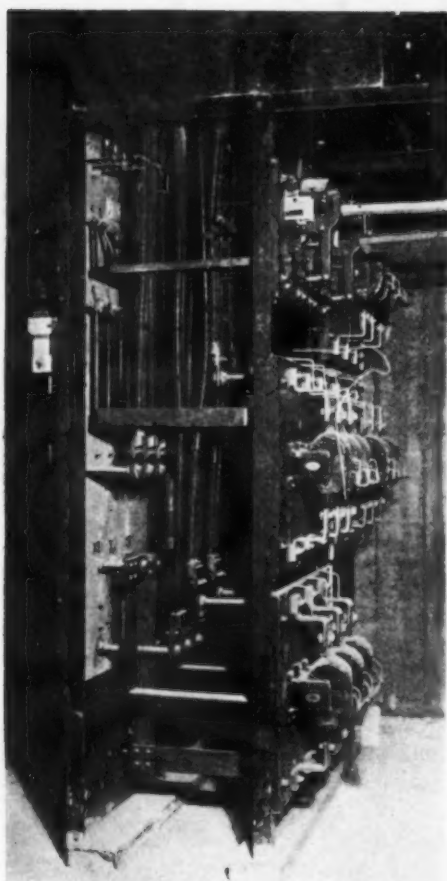


Fig. 2—Back View of A.C. Switchboard Supplying Energy for Stage and Auditorium Lighting

Energy is supplied to the building through two D. C. and two A. C. services, the former being 3-wire 240-120 volts, and the latter 4-wire three phase, 120 volts between phase wire and neutral and 208 volts three phase between the phase wires. The total demand on the four services is expected to be 2500 KW. There are no ties within the building that connect the services together, the network around the block being deemed sufficient interconnection. The load is divided in accordance with its proximity to the supply sources; the only load that is supplied from both D. C. services through double-throw switches is the "kino-booth," as the projector booth is called. Both lighting and power in it are provided with double supply. Inasmuch as the motion picture is the reason for the theatre's being, this special precaution was made in order to insure the greatest possible continuity of performance.

The 50th Street D. C. service supplies energy for the general lighting and power in the areas near that side

of the building, exclusive of the auditorium; also the marquis lighting, attraction board lighting, elevators, lamp standards on the street and emergency lighting. It is metered by six 800-amp. two-wire 120-volt meters for lighting, one 200-amp. 3-wire meter for emergency lighting, and two 600-amp. 2-wire 240-volt meters for power. The reason for breaking up the D. C. loads into groups of not over 800-amp. is the difficulty testing D. C. meters of higher capacity.

The 50th Street A. C. service supplies power mainly to the refrigerating equipment which is part of the theatre air-conditioning system. The bulk of the load consists of two three-phase 208-volt motors, one of 350 hp. and one 250 hp. driving the refrigerant compressors. Energy is metered by three meters, two for refrigerating power, and one for general power. A different energy cost rate applies to refrigerating power.

The 51st Street D. C. service supplies stage lighting and power and general power in the area adjacent to it. Energy is metered by six 800-amp. 120-volt meters for lighting and one 400-amp. 240-volt meter for power.

The 51st Street A. C. switchboard, a back view of which is shown in Fig. 2, supplies energy for the auditorium and stage lighting, and for the "tube" signs. The load is metered by four

meters, one for the auditorium lighting, one for stage lighting, one for power, one for "tube" signs. The reason for dividing the A. C. load is that different energy cost rates apply to lighting, power, and signs.

The two D. C. switchboards are each in a separate room and adjacent to them are rooms in which the New York Edison Company's service boards are located. Connection between the boards is by means of bare copper bars passing through the separating walls in slate bushings. The A. C. switchboards are similarly enclosed, the rooms being located adjacent to the United Electric Light and Power Company's transformer vaults. Connection between the two rooms is by means of cable in conduit.

The lighting in the main is remotely controlled from two points, one the manager's office and the other the stage. The manager's remote control panel controls the lamp posts, marquis, tube signs, flasher, attraction board, roof sign, and the lighting in the public spaces not within the sphere of influence of the stage, such as the ticket foyer, the grand foyer, stairways, lavatories, aisles, exits. The controls consist of toggle switches with pilot lights which actuate contactors in the feeders to the distribution panels. The lighting in the non-public spaces such as offices, employees rooms, dressing rooms, ma-

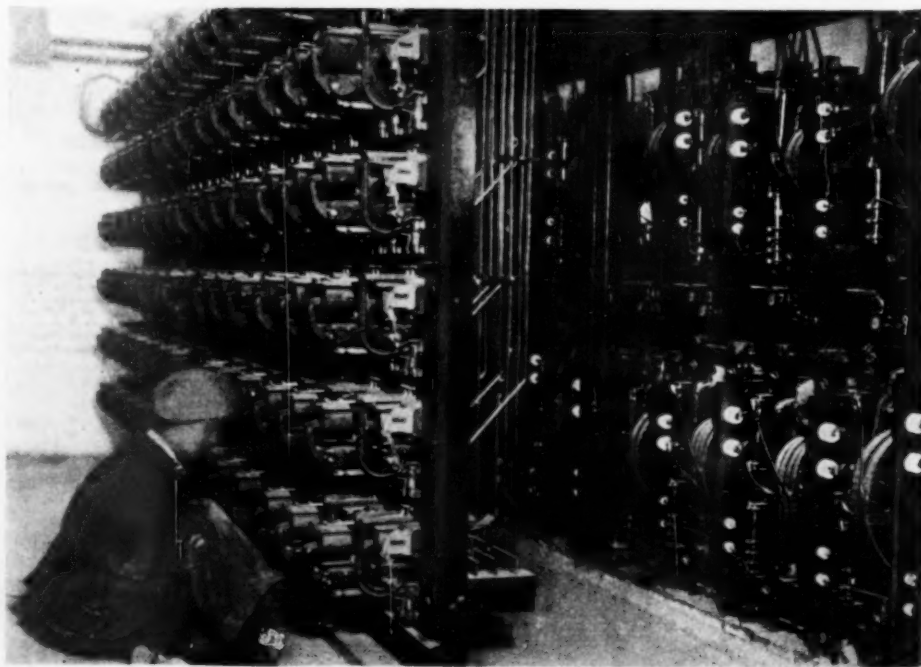


Fig. 3—Contactor Board and Reactor Frame
About one-third the installation here visible

chinery rooms are controlled in the ordinary manner by local switches and distribution panels.

The lighting scheme in the public spaces is arranged in such a manner that a patron entering from the gayly lighted streets of the theatre district is gradually brought into the soothing, quiet, indirect, light of the auditorium. Therefore the marquis lighting over the sidewalk is of the same type as used in most theatres, consisting of hundreds of lamps located on the under side. In the ticket lobby the lighting intensity is decreased and is supplied partly by ceiling and bracket fixtures. In the grand foyer the lighting begins to take on the nature of that used in the auditorium, that is cove lighting, although there is still considerable direct lighting from an enormous pendant fixture in the center and some ornamental wall brackets. In the auditorium, most of the lighting is supplied from coves, of which there are about forty in number.

Cove Lighting

Cove lighting has a tendency to break up the architectural unity of the auditorium. Therefore, there has been added some flood lighting to illuminate the spaces left in darkness by the coves. The flood lighting units are located in the kino-booth which is built into the first balcony.

An idea of the comparative values can be gained from the connected loads: Cove lighting 287 kw., bracket fixtures 12 kw., flood lighting 84 kw., or a total of 383 kw. The dimmers control 310 kw. of this total.

The lighting equipment in the coves consists of a continuous sheet metal trough, having a removable cover. The cover is drilled every 3 or 4 inches to take the base of the lamp receptacle. The wiring lies in the trough.

The lighting in the auditorium with a few exceptions is controlled from the stage control board. The exceptions are the aisle lights, exit lights and emergency lights.

The lighting on the stage is, of course, controlled from the stage control board which is located adjacent to the stage behind the left proscenium. The stage control board was designed and manufactured as was most of the other lighting equipment by the Hub Electric Co. of Chicago. There is an

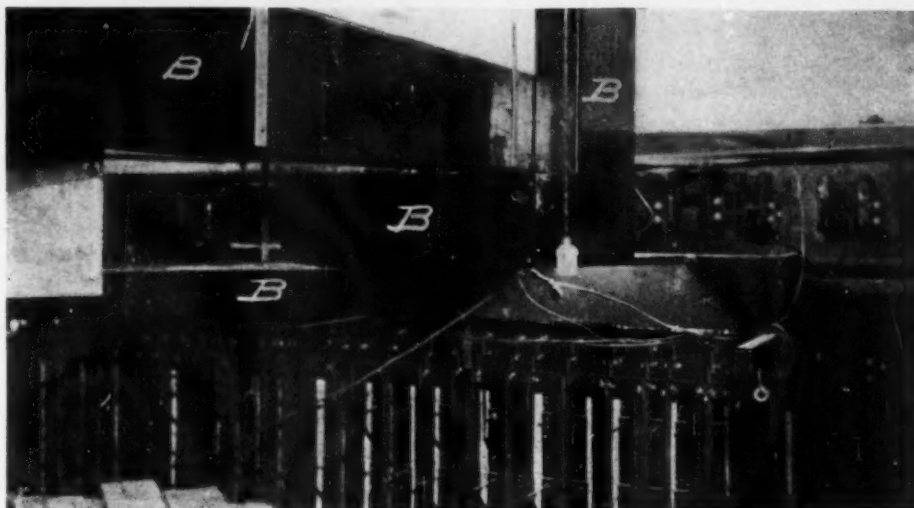


Fig. 4—Wiring Ducts in Reactor Rooms Under Stage Control Board

unusual concentration of lighting on the stage of the Roxy Theatre. Some conception may be formed from the connected stage lighting load of 780 kw. A large part of this load is controlled by dimmers.

The ordinary resistance type dimmer will control a maximum load of 2000 watts; if this type had been used throughout, it will be seen that more than four hundred resistance dimmers would have been required, which would have made the control board many times the length of the present 22-ft. board. This reduction of space was attained through the use of reactance dimmers which control circuits up to 15,000 watts capacity, thus supplanting from two to eight resistance dimmers. The Roxy Theatre is the first one in New York to use this type of dimming. The lighting circuits dimmed by reactors are of course supplied by alternating current. About one-third of the circuits, those having a capacity of less than 2000 watts are dimmed by resistances and are supplied with D. C.

The variation in lighting intensity by means of reactors is procured by saturating the magnetic circuit of the reactor by means of a direct-current coil. The voltage drop in the reactor increases as the saturating current decreases. The control current is in turn controlled by an ordinary dimming resistance. In order to overcome the voltage drop in the reactors at zero dimming setting it is necessary to provide booster transformers for boosting the line voltage from 120 to 131 volts. Two banks of three transformers each

are provided, one of 125 kva for the stage and the other of 100 kva. for the auditorium. They are inserted in the feeders supplying energy to the circuits controlled by the reactors and are located in a separate room in the basement near the 51st Street A. C. switchboard.

All the circuits controlled from the stage control board are remote controlled. The control coils of all the contactors are energized by direct current. The contactors and reactors are located in a room in the basement directly under the control board. This favorable location is the result of the efforts of the electrical contractor to have these two wiring centers located as close together as possible. Some conception of the enormous amount of wiring between these points may be gained from the fact that there are on the control board 520 control switches, most of which are double-throw, and 200 dimmer and control resistances all connecting either with the 260 contactors or the 87 reactors in the room below, and from there leading back to the protection center directly in back of the control board. The protection center consists of an A. C. magazine-type fuse panel of 600 circuits, and of a D. C. magazine type fuse panel containing nearly 200 circuits.

The reason for this multiplicity of circuits is not only the 15-amp. code rule but also the fact that besides white lighting there are blue, green, amber and red lighting sources.

The wiring between the control board, the fuse panels and the con-

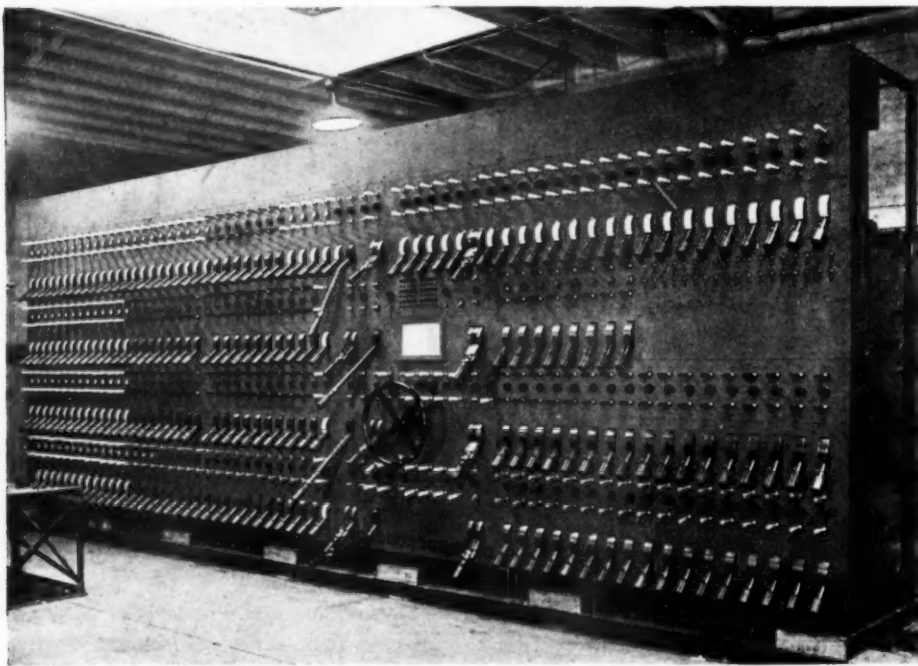


Fig. 6—Stage Control Board in Manufacturer's Shop

tactors and reactors is carried in large 10-gauge sheet metal ducts with removable covers and in which the wires are neatly bundled in groups. Fig. 4 shows at "B" a part of the ducts on the ceiling of the reactor room.

The stage control board is what is known as a pre-set type board. Two

absolutely independent set-ups may be made, but for ordinary lighting effects it is possible to get three set-ups. This means while a performance is under way with a given lighting set-up, the individual switches for the next two set-ups may be closed but the circuits controlled by them will not be energ-

ized until the master switches are thrown. Referring to Fig. 6 the part of the board to the right of the large handwheel is the auditorium control section, while that to the left is the stage section. The control of these two sections is entirely independent, there being separate master switches for each section. The mechanical operation of the dimmers, however, may be interlocked, so that a row across the entire board may be operated in unison, or all the dimmers may be connected to the handwheel and thus lighting in the auditorium and stage can be dimmed simultaneously.

The simplified diagram in Fig. 5 will explain the electrical control used on this board. The smallest control unit is a group of five branch circuits which we shall call a group for convenience. Three of these branch circuits are on one leg of a two-pole 60-amp. contactor, two circuits on the other leg. The contactor has two closing coils, each coil being controlled by a pilot switch. This is the reason why two entirely independent set-ups are possible. The third limited set will be explained further on.

A group control unit, the smallest

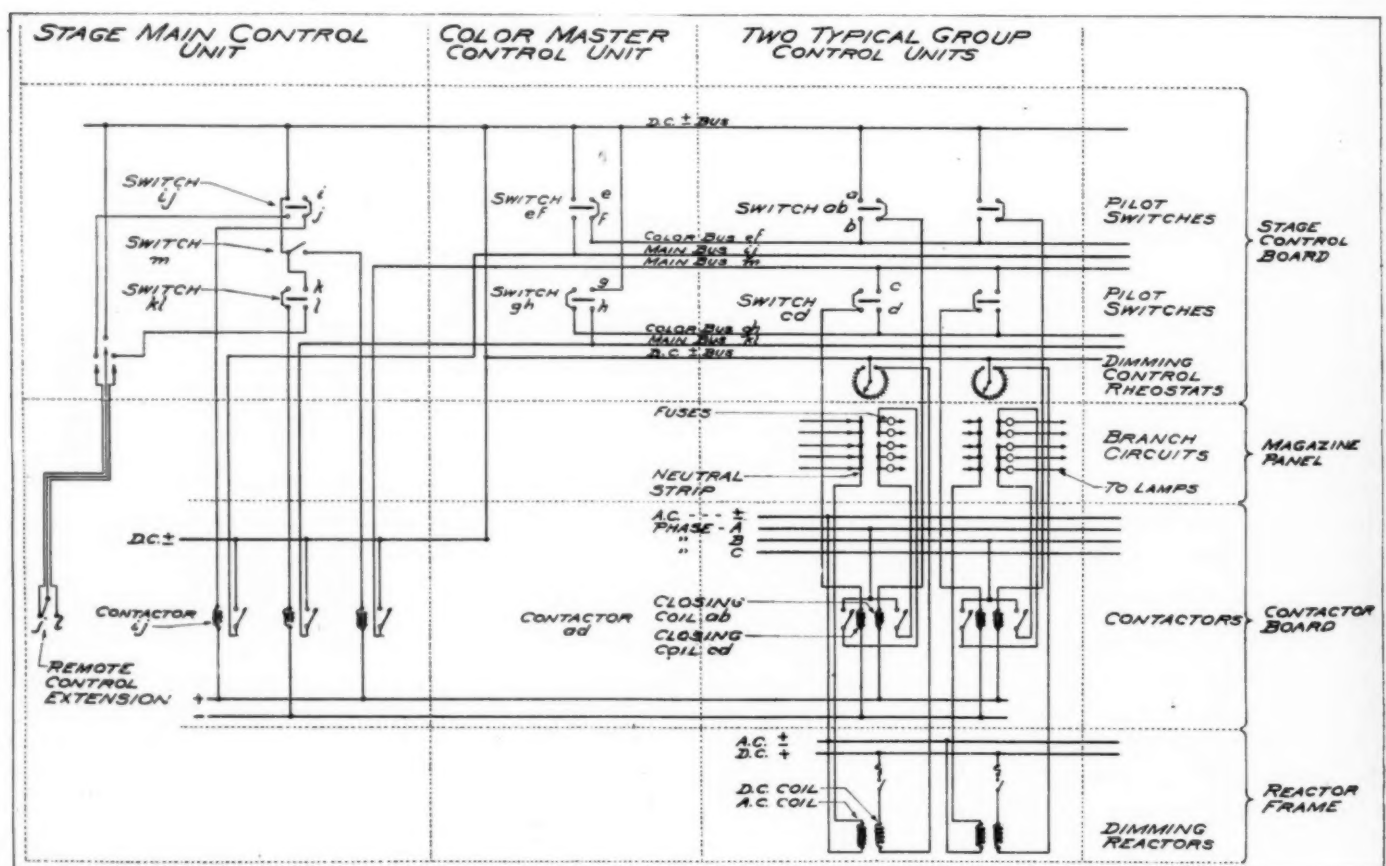


Fig. 5—Stage Lighting Control System

unit, consists of pilot switch *a-b* and switch *c-d*, see Fig. 5, with an indicating lamp between them. These can also be readily seen in Fig. 6. Throwing switch *a-b* into position "a" will energize contactor coil *a-b* and this will light this group of circuits; in other words, it may be lighted independently if desired. Throwing switch *a-b* into position "b" connects contactor coil *a-b* to color bus *e-f*, to which any other group of the same color may be connected. This color bus *e-f* is energized if switch *e-f*, the color master, is thrown into position "e," thus lighting all the units connected to it. Or, in other words all groups of the same color may be lighted together if desired. If the color master switch *e-f* is thrown into position "f," it connects the color bus to stage main bus *i-j*, controlled by stage main switch *i-j* through contactor *i-j*. The other three colors may be connected to bus *i-j* by their respective color master switches. If stage main switch *i-j* is thrown into position "i" all the color master switches connected to it will be energized and all the units connected to the color masters will light. In this way all control is centered at one point. If stage master switch *i-j* is thrown into position "j" control is passed on to a three pole receptacle into which a three wire extension may be plugged ex-



Fig. 7—Wiring Duct Rising from Trench to Motor Terminals

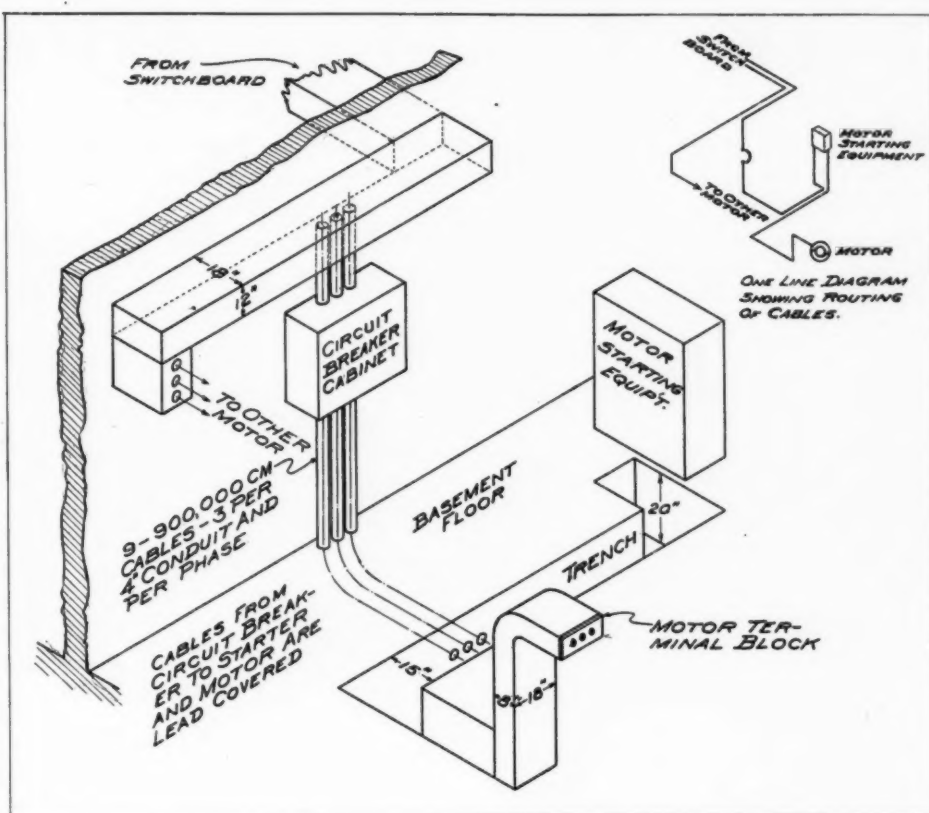


Fig. 8—Diagrammatic Representation of Wiring Arrangement for a 350 HP. Motor

tending the control to any desired point. At the end of the extension there is a double throw switch *j-l*. The remote control switch *j-l* can select between what is set up on stage main switch *i-j* in position "j" and on stage main switch *k-l* in position "l."

For the second independent set-up, stage main switch *k-l* when in position "k" will light everything on the color master switches *g-h* in position "h," the individual groups being connected when switches *c-d* are in position "d." Throwing color master into position "g" will light everything connected to color bus *g-h*.

The third set-up is procured by throwing switches *c-d* into position "c" thus connecting them to stage master bus "m." This bus connects to all group switches *c-d* regardless of color, and stage main switch "m" will control all the groups connected to it through bus "m" without the intermediary of a color master switch. This third set-up is limited to those groups that are not in position "d."

With these three independent arrangements of lighting each controlled by one switch it is possible to pre-arrange the lighting effects of the next two scenes while one is under way.

In Fig. 5 there is also shown a typical reactor dimmer circuit. When contactor *a-d* closes energy is fed from a phase wire of the line through branch circuit fuses to the lamps, back through the neutral connecting strip, through the A. C. reactor coil to the neutral leg of the line. The D. C. dimmer control circuit can readily be traced from the positive leg of the D. C. line through the D. C. reactor coil and the variable resistance to the neutral leg of the D. C. line.

The control board operator can see the stage from his position at the board but he cannot see the auditorium. In order to make it possible for him to observe the auditorium a periscope has been provided.

Use of Duct

An interesting case of an unusual mechanical treatment of electric wiring is the extension of the use of sheet metal ducts to the wiring of the two refrigerant compressor motors. These are of the squirrel cage induction type, started by compression type resistors. One motor has a capacity of 350 hp., the other 250 hp. The first requires nine 900,000 cm cables, and if run in

(Continued on Page 42)

The New Motor Wiring Tables

THE new motor wiring tables, adopted by the Electrical Committee for field trial before actually incorporating them in the National Electrical Code, constitute the first na-

tional recognition of load factor. The aims of these new tables and the accompanying rules, which are here presented, are four-fold:

(1) To reach suitable economy in

motor circuiting conductors by making them smaller than by following the old theory of wire protection based upon constant load.

(2) To simplify the wiring prob-

TABLE 1. FOR SELECTING WIRE AND FUSE SIZES FOR MOTOR BRANCH CIRCUITS

Full load current rating of motor Amperes	Minimum allowable size of copper wire, B & S gauge or cir. mils			For Running Protection of Motors		Maximum Allowable Rating of Branch Circuit Fuses			
				Max. Rating of N.E.C. fuses Amperes	Max. Setting of time limit protective device Amperes	Squirrel cage, full voltage starting. Single phase repulsion or split phase	Squirrel cage, reduced voltage starting. High reactance squirrel cage*** (up to 30a.).	Squirrel cage, reduced voltage starting. High reactance squirrel cage*** (above 30a.).	Slip Ring A.C. and D.C.
	Rubber	Varnished Cloth	Slow Burning			Amperes	Amperes	Amperes	Amperes
1**	14	14	14	2*	1.25*	15	15	—	15
2**	14	14	14	3*	2.50*	15	15	—	15
3**	14	14	14	4*	3.75*	15	15	—	15
4**	14	14	14	5*	5.0 *	15	15	—	15
5**	14	14	14	8*	6.25*	15	15	—	15
6**	14	14	14	8*	7.50*	20	15	—	15
7	14	14	14	10*	8.75*	25	20	—	15
8	14	14	14	10*	10.0 *	25	20	—	15
9	14	14	14	12*	11.25*	30	25	—	15
10	14	14	14	15*	12.50*	30	25	—	15
11	14	14	14	15*	13.75*	35	30	—	20
12	14	14	14	15*	15.00*	40	30	—	20
13	12	14	14	20*	16.25*	40	35	—	20
14	12	14	14	20*	17.50*	45	35	—	25
15	12	12	14	20*	18.75*	45	40	—	25
16	12	12	14	20*	20.00*	50	40	—	25
17	10	12	12	25*	21.25*	55	45	—	30
18	10	12	12	25*	22.50*	55	45	—	30
19	10	12	12	25*	23.75*	60	50	—	30
20	10	12	12	25*	25.0 *	60	50	—	30
22	8	10	10	30	27.50	70	55	—	35
24	8	10	10	30	30.00	75	60	—	40
26	8	8	8	35	32.50	80	65	—	40
28	8	8	8	35	35.00	85	70	—	45
30	6	8	8	40	37.50	90	75	—	45
32	6	8	8	40	40.00	100	—	65	50
34	6	6	8	45	42.50	110	—	70	55
36	6	6	8	45	45.00	110	—	75	55
38	6	6	8	50	47.50	120	—	80	60
40	6	6	8	50	50.00	120	—	80	60
42	5	6	6	55	52.50	150	—	85	65
44	5	6	6	55	55.0	150	—	90	70
46	4	6	6	60	57.50	150	—	95	70
48	4	6	6	60	60.0	150	—	100	75
50	4	5	6	65	62.50	150	—	100	75
52	4	5	6	65	65.0	175	—	110	80
54	4	4	6	70	67.50	175	—	110	85
56	4	4	6	70	70.00	175	—	120	85
58	3	4	5	75	72.50	175	—	120	90
60	3	4	5	75	75.00	200	—	120	90
62	3	4	5	80	77.50	200	—	125	95
64	3	4	5	80	80.00	200	—	150	100
66	2	4	4	85	82.50	200	—	150	100
68	2	4	4	85	85.00	225	—	150	110
70	2	3	4	90	87.50	225	—	150	110
72	2	3	4	90	90.00	225	—	150	110
74	1	3	3	95	92.50	225	—	150	120
76	1	3	3	95	95.00	250	—	175	120
78	1	2	3	100	97.50	250	—	175	120
80	1	2	3	100	100.00	250	—	175	120
82	0	2	2	110	102.50	250	—	175	125
84	0	2	2	110	105.00	275	—	175	150
86	0	2	2	110	107.50	275	—	175	150

lem by keeping the wire the same size for all circuit conductors up to and beyond the motor protective device.

(3) To provide advance guidance as to permissible size of fuse or automatic overload protective device (A. O. P. D.) so as to leave no uncertainty.

(4) In some respects to favor

economy and to indicate the advisability of using time limit protective devices instead of fuses, since with the former one A. O. P. D. may serve instead of two, i. e. one for motor and one for circuit.

These tables, it must be remembered, are not complete. There is consider-

ably more work to be done before another Electrical Committee meeting.

The new tentative rules and tables follow:

808. Motors and Motor Circuits

a. Motors used for continuous duty. Except as otherwise provided in this section, the following tables shall govern the minimum allowable carrying capacity of the conductors

TABLE 1 (Continued). FOR SELECTING WIRE AND FUSE SIZES FOR MOTOR BRANCH CIRCUITS

Full load current rating of motor Amperes	Minimum allowable size of copper wire, B & S gauge or cir. mils			For Running Protection of Motors		Maximum Allowable Rating of Branch Circuit Fuses			
	Rubber	Varnished Cloth	Slow Burning	Max. Rating of N.E.C. fuses	Max. Setting of time limit protective device	Squirrel cage, full voltage starting. Single phase repulsion or split phase	Squirrel cage, reduced voltage starting. High reactance squirrel cage*** (up to 30a.).	Squirrel cage, reduced voltage starting. High reactance squirrel cage*** (above 30a.).	Slip Ring A.C. and D.C.
				Amperes	Amperes	Amperes	Amperes	Amperes	Amperes
88	0	2	2	110	110.00	275	—	200	150
90	0	1	2	120	112.50	275	—	200	150
92	0	1	2	120	115.00	300	—	200	150
94	0	1	2	120	117.50	300	—	200	150
96	0	1	2	120	120.00	300	—	200	150
98	0	0	2	125	122.50	300	—	200	150
100	0	0	2	125	125.00	300	—	200	150
105	00	0	1	150	131.5	325	—	225	175
110	00	0	1	150	137.5	350	—	225	175
115	00	0	1	150	144.0	350	—	250	175
120	00	0	1	150	150.0	375	—	250	200
125	000	00	0	175	156.5	375	—	250	200
130	000	00	0	175	162.5	400	—	275	200
135	000	00	0	175	169.0	450	—	275	225
140	000	00	0	175	175.0	450	—	300	225
145	200,000	000	0	200	181.5	450	—	300	225
150	200,000	000	0	200	187.5	450	—	300	225
155	200,000	000	0	200	194.0	500	—	325	250
160	200,000	000	0	200	200.0	500	—	325	250
165	0000	000	00	225	206.	500	—	350	250
170	0000	200,000	00	225	213.	550	—	350	275
175	0000	200,000	00	225	219.	550	—	350	275
180	0000	200,000	00	225	225.	550	—	375	275
185	250,000	200,000	000	250	231.	600	—	375	300
190	250,000	200,000	000	250	238.	600	—	400	300
195	250,000	0000	000	250	244.	600	—	400	300
200	250,000	0000	000	250	250.	600	—	400	300
210	300,000	0000	000	275	263.	—	—	450	325
220	300,000	250,000	000	275	275.	—	—	450	350
230	350,000	250,000	200,000	300	288.	—	—	500	350
240	350,000	250,000	200,000	300	300.	—	—	500	375
250	400,000	300,000	0000	325	313.	—	—	500	375
260	400,000	300,000	0000	325	325.	—	—	550	400
270	500,000	350,000	250,000	350	338.	—	—	550	450
280	500,000	350,000	250,000	350	350.	—	—	600	450
290	500,000	350,000	300,000	375	363.	—	—	600	450
300	500,000	400,000	300,000	375	375.	—	—	600	450
320	500,000	500,000	300,000	400	400.	—	—	—	500
340	600,000	500,000	350,000	450	425.	—	—	—	550
360	600,000	500,000	350,000	450	450.	—	—	—	550
380	700,000	500,000	400,000	500	475.	—	—	—	600
400	700,000	600,000	400,000	500	500.	—	—	—	—
420	800,000	600,000	500,000	550	525.	—	—	—	—
440	800,000	700,000	500,000	550	550.	—	—	—	—
460	900,000	700,000	500,000	600	575.	—	—	—	—
480	900,000	700,000	500,000	600	600.	—	—	—	—
500	1,000,000	800,000	600,000	—	625.	—	—	—	—
520	1,000,000	800,000	600,000	—	650.	—	—	—	—
540	1,100,000	900,000	600,000	—	675.	—	—	—	—
560	1,200,000	900,000	700,000	—	700.	—	—	—	—
580	1,200,000	1,000,000	700,000	—	725.	—	—	—	—
600	1,300,000	1,000,000	700,000	—	750.	—	—	—	—
625	1,400,000	1,000,000	800,000	—	782.	—	—	—	—

of any individual motor circuit and the maximum allowable rating or setting of the circuit and motor protective devices to be used in each ungrounded conductor of any individual motor circuit. These tables are based upon a conductor current carrying capacity and a rating or setting of motor running protective device of 125% of the motor full load current rating and branch circuit fuse protection according to the following percentages of the motor full load current.

For motors having larger full load current ratings than those given in these tables, calculations for the carrying capacities of conductors and rating or setting of protective devices shall be made on the same basis.

Type of Motor	Percent motor full load current
Single phase, repulsion or split-phase starting	300
Squirrel cage, full voltage starting	300
Squirrel cage, reduced voltage starting (not more than 30 amp.) ..	250
High reactance squirrel cage (not more than 30 amp.)	250
Squirrel cage, reduced voltage starting (more than 30 amp.)	200

High reactance squirrel cage (more than 30 amp.)	200
Slip ring A. C. and D. C.	150

For the protection of branch circuits of more than 600 amp. capacity and for voltages of more than 600, circuit breakers only are permitted. The maximum setting of circuit breakers for such use shall not be in excess of that specified in sub-paragraph 5 of this section. Although it is desirable to keep the branch circuit protection as low as possible, cutout bases for containing such branch circuit fuses shall not be of a smaller size than that required to accommodate the branch fuses specified in the following tables for any

FULL LOAD MOTOR CURRENTS

TABLE 2. TWO-PHASE A.C. MOTORS (4-Wire)†

HP	Squirrel Cage Induction Type Amperes					Wound Rotor and High Resistance Squirrel Cage Type Amperes				
	110V	220V	440V	550V	2200V	110V	220V	440V	550V	2200V
1/4*	4.3	2.2	1.1	.9	—	—	—	—	—	—
3/4*	4.7	2.4	1.2	1.0	—	—	—	—	—	—
1*	5.7	2.9	1.4	1.2	—	6.8	3.4	1.7	1.3	—
1 1/2*	7.7	4.0	2	1.6	—	—	—	—	—	—
2*	10.4	5	3	2.0	—	12.5	6.2	3.1	2.5	—
3	—	8	4	3.0	—	17.3	8.7	4.3	3.4	—
5	—	13	7	6	—	—	13	6.5	5.2	—
7 1/2	—	19	9	7	—	—	22	11	9	—
10	—	24	12	10	—	—	24	12	10	—
15	—	33	16	13	—	—	39	20	16	—
20	—	45	23	19	—	—	49	25	20	—
25	—	55	28	22	6	—	58	29	23	7
30	—	67	34	27	7	—	71	36	29	8
40	—	88	44	35	9	—	92	46	37	10
50	—	108	54	43	11	—	110	55	44	12
60	—	129	65	52	13	—	130	65	52	14
75	—	156	78	62	16	—	163	82	66	17
100	—	212	106	85	22	—	213	106	85	22
125	—	268	134	108	27	—	269	135	108	27
150	—	311	155	124	31	—	315	157	125	32
200	—	415	208	166	43	—	430	215	173	45

TABLE 3. SINGLE PHASE A.C. MOTORS

HP	Amperes 110V	Amperes 220V	Amperes 440V
1/4*	3.34	1.67	—
1/4*	4.8	2.4	—
1/2*	7	3.5	—
3/4*	9.4	4.7	—
1*	11	5.5	—
1 1/2*	15.2	7.6	—
2*	20	10	—
3	28	14	—
5	46	23	—
7 1/2	68	34	17
10	86	43	21.5

†Values of current in common wire of 2-phase 3-wire system will be 1.41 times values given.

‡These values of full load currents are average for all speeds and frequencies.

*In the running protection of motors of 2 H.P. and less see sub-paragraph 1 below.

**For the grouping of small motors under the protection of a single set of fuses see sub-paragraph 2 below.

***High reactance squirrel cage motors are those designed to limit the starting current by means of deep slot secondaries or double wound secondaries.

A combined switch and cutout used as a motor controller shall be of a size to accommodate the motor running fuses, and a service switch and cutout, where one is used, shall be of a size to accommodate fuses corresponding to the motor branch circuit fuses.

TABLE 4. THREE-PHASE A.C. MOTORS

HP	Squirrel Cage Induction Type Amperes					Wound Rotor and High Resistance Squirrel Cage Type Amperes				
	110V	220V	440V	550V	2200V	110V	220V	440V	550V	2200V
1/4*	5	2.5	1.3	1	—	—	—	—	—	—
3/4*	5.4	2.8	1.4	1.1	—	—	—	—	—	—
1*	6.6	3.3	1.7	1.3	—	7.8	3.9	2	1.6	—
1 1/2*	9.4	4.7	2.4	2.0	—	—	—	—	—	—
2*	12	6	3	2.4	—	14.4	7.2	3.6	2.9	—
3	—	9	4.5	4	—	20.0	10	5	4	—
5	—	15	7.5	6	—	—	15	7.5	6	—
7 1/2	—	22	11	9	—	—	25	13	10	—
10	—	27	14	11	—	—	28	14	11	—
15	—	38	19	15	—	—	45	23	18	—
20	—	52	26	21	—	—	56	28	22	—
25	—	64	32	26	7	—	67	34	27	7.5
30	—	77	39	31	8	—	82	41	33	9
40	—	101	51	40	10	—	106	53	42	11
50	—	125	63	50	13	—	128	64	51	14
60	—	149	75	60	15	—	150	75	60	16
75	—	180	90	72	19	—	188	94	75	19
100	—	246	123	98	25	—	246	123	99	25
125	—	310	155	124	32	—	310	155	124	31
150	—	360	180	144	36	—	364	182	145	37
200	—	480	240	195	49	—	490	245	196	52

TABLE 5. DIRECT CURRENT MOTORS

HP	Amperes 115V	Amperes 230V	Amperes 550V
1/2*	4.5	2.3	—
3/4*	6.5	3.3	1.4
1*	8.4	4.2	1.7
1 1/2*	12.5	6.3	2.6
2*	16.1	8.3	3.4
3	23.0	12.3	5.0
5	40	19.8	8.2
7 1/2	58	28.7	12.0
10	75	38	16.0
15	112	56	23.0
20	149	74	30
25	185	92	38
30	220	110	45
40	294	146	61
50	364	180	75
60	436	215	90
75	540	268	111
100	—	357	146
125	—	443	184
150	—	—	220
200	—	—	295

value of motor full load current.

The following exceptions to the foregoing tables are permitted:

1. Motors of 2 H. P. or less shall be considered as being sufficiently protected by the automatic overload protective devices used to protect the conductors of the motor circuits as specified in the foregoing tables.

It is recommended that the running protection specified in the tables be provided for all such small motors when they are located out of sight of the operator.

2. Two or more small motors grouped under the protection of a single set of fuses and with or without other current consuming devices in the circuit shall be considered as being sufficiently protected if the rating of the fuses does not exceed 15 amp. and the total wattage of the circuit does not exceed 1,320. No individual motor of such a group shall have a full load rated current of more than 6 amp.

3. Automatic overload protective devices may be omitted at the point where the conductors carrying the current of only one motor are connected to the mains, provided (a) conductors having a carrying capacity equal to that of the mains are carried to the motor running protective devices, (b) the carrying capacity of these conductors is at least $\frac{1}{2}$ of that of the mains to which they are connected, the length of such conductors to the motor running protective devices is not greater than 25 feet and they are suitably protected from mechanical injury. In such cases consideration should be given to the interrupting capacity of the motor running protective device. When thermal cutouts are used this will require the installation of N. E. C. fuses for the protection of these mains, the fuses to have a rating not exceeding that indicated on the smallest thermal cutout in the group protected.

4. For the protection of motors used on cranes and hoists see Sec. 3006 of this Code.

5. Except for the protection of thermal cutouts, automatic overload circuit breakers of the time limit type may be used for A. C. or D. C. motor branch circuit protection and automatic overload circuit breakers of the instantaneous type may be used for D. C. motor branch circuit protection under the conditions specified in paragraph d, provided the setting of the time limit type is not greater than —%, and of the instantaneous type not greater than —% of the motor name plate current rating.

6. When time limit protective devices are used for the running protection of motors, the following table shall govern the minimum allowable number and the location of the overload units, such as trip coils, relays or thermal cutouts:

b. The secondary conductors of a wound rotor A. C. motor between the slip rings and the controller shall have a carrying capacity which is not less than 125% of the full load secondary current of the motor, and between the controller and resistor a carrying capacity which is not less than that given in the following table:

Resistor Duty Classification	Carrying Capacity in % of Full Load Secondary Current
Light starting	35
Heavy starting	45
Extra heavy starting	55
Light intermittent	65
Medium intermittent	75
Heavy intermittent	85
Continuous	110

c. *Motors used for short time duty.* When motors are used in classes of service having short time duty conductors having carrying capacities greater than those given in the tables in paragraph (a) will be required in the motor circuit. In the majority of cases the carrying capacity need not exceed the percentages of the motor name plate current ratings given in the following table. Motors of this class are considered as being sufficiently protected by the branch circuit protective devices.

This table appears at the top of page 78 of the 1925 Edition of the Code.

PERCENTAGE OF NAME PLATE CURRENT RATING

Classification of Service	5 minute rating	10 and 15 minute rating	30 and 60 minute rating	2 hour rating	Continuous rating
Operating valves raising or lowering rolls	110	120	150	200	250
Rolling tables	110	120	135	180	200
Hoists, rolls, ore and coal handling machines	110	115	120	150	170
Freight and passenger elevators, shop cranes, tool heads, pumps, etc.	110	110	110	120	140

Kind of Motor	Supply System	Number and location of overload units, such as trip coils, relays or thermal cutouts
1 phase, A.C. or D.C.	2-wire, 1 phase, A.C. or D.C., ungrounded	1 in either conductor
1 phase, A.C. or D.C.	2-wire, 1 phase, A.C. or D.C., one conductor grounded	1 in ungrounded conductor
1 phase, A.C. or D.C.	3-wire, 1 phase, A.C. or D.C., grounded neutral	1 in ungrounded conductor
2 phase, A.C.	3-wire, 2 phase, A.C., ungrounded	2, one in each phase
2 phase, A.C.	3-wire, 2 phase, A.C., one conductor grounded	2 in ungrounded conductors
2 phase, A.C.	4-wire, 2 phase, A.C., grounded or ungrounded	2, one per phase in ungrounded conductors
2 phase, A.C.	5-wire, 2 phase, A.C., grounded neutral or ungrounded	2, one per phase
3 phase, A.C.	3-wire, 3 phase, A.C., ungrounded	2 in any 2 conductors
3 phase, A.C.	3-wire, 3 phase, A.C., one conductor grounded	2 in ungrounded conductors
3 phase, A.C.	3-wire, 3 phase, A.C., grounded neutral	2 in any 2 conductors
3 phase, A.C.	4-wire, 3 phase, A.C., grounded neutral or ungrounded	2 in any 2 conductors

d. Fuses shall not be required in series with automatic overload protective devices of other types (a) on main switchboards, (b) where otherwise subject to competent supervision, (c) where next back on the line there are fuses rated or a time limit circuit breaker set at not more than 500%, or an instantaneous type circuit breaker set at not more than 700% of the motor name plate current rating. For circuits having a carrying capacity greater than that for which approved enclosed fuses are rated, an approved circuit breaker of ample interrupting capacity shall be used.

e. Automatic overload protective devices, other than fuses, used for either motor or motor circuit protection, shall have a continuous current carrying capacity of at least 115% of the full load current rating of the motor.

f. A controller for a D. C. motor, which has an overload release device operative during the starting as well as the running period, may also serve as the running overload protective device.

g. The controller for an A. C. motor may also serve as the running overload protective device if it is equipped with the number of overload units (trip coils, relays or thermal cutouts) called for in the table of sub-paragraph a-6 of this section, and if it is operative when in the running position to open all of the ungrounded conductors automatically under overload.

h. Motor running protective devices may be shunted or cut out during the period for starting the motor and the motor and its circuit shall be considered sufficiently protected during this starting period, provided that next back on the line there are fuses rated or a time limit circuit breaker set at not more

than 500%, or an instantaneous type circuit breaker set at not more than 700% of the motor name plate current rating.

i. When a switch is used to shunt the motor running protective device during the starting period, it shall be of a type that cannot be left in the starting position.

j. Then control circuits of a magnetic controller shall be considered as being sufficiently protected by the motor circuit protective device, provided they are suitably protected from mechanical injury and do not extend beyond the machine on which the controller may be installed.

k. In many cases conductors of a feeder or main circuit supplying a group of motors need not have a carrying capacity equal to the sum of the full load current ratings of the motors supplied. A diversity factor may be permitted by the Inspection Department having jurisdiction to be used in determining the carrying capacity of these feeders or main circuits, the value of this factor depending on the size and number of the motors supplied and the character of the load.

Earl N. Peak, Marshalltown

EARL N. PEAK, president and general manager of the Marshall Electric Company, Marshalltown, Iowa, entered the electrical contracting business by degrees, having started his electrical career as a telephone company employee. He was born in Wilsey, Morris County, Kansas, in 1888 and the above-mentioned telephone work began in 1903 in the service of the Farmers' Mutual Telephone Company at Jesup, Iowa. Three years later he transferred his allegiance to the Central Union Telephone Company of Moline, Ill., and a year later was sent to Rock Island as foreman of city maintenance for the company. Following that he spent a year on inside work and then entered the employ of the Marshall Telephone Company at Marshalltown, remaining there for three years. An equal length of time ensued as the manager of a general construction and contracting company. Then, after twelve years of such general experience, Mr. Peak felt it was time to strike out for himself and he did this by organizing the Marshall Electric Company. Since its organization the company has grown very rapidly until now Mr. Peak is recognized as one of the foremost electragists of the state. The company's business embraces all kinds of electrical construction: Transmission and rural lines, city and town construction, power house and power wiring, housewiring and an extensive fixture and appliance business. He has been active in association work, having been one of the organizers of the Iowa Association of Electragists, of which he is now president. He is prominent in local affairs also, having been president of the Associated Retailers of his city for two years, president of the Kiwanis Club for one year and president of the Chamber of Commerce for sixteen months.



Electragists You Should Know

J. R. Payton, Des Moines

THOUGH the business of the Electrical Engineering and Construction Company, of which J. R. Payton is president and general manager, was not established until 1920, it has under his leadership become one of the best-known companies in Iowa, so much so that Mr. Payton was elected secretary and treasurer of the Iowa Association of Electragists at the last meeting of the organization. Mr. Payton, though still a young man, having been born in Springfield, Mo., in 1891, has been in the electrical business for twenty-three years. He began it at the age of thirteen in the capacity of apprentice with the Danville Car and Foundry Company. During his early years in the business he devoted himself principally to construction and mine and motor repair work and later on served for two years as chief electrical inspector for the City of Des Moines. He felt, however, that his bent was for construction work rather than for inspection and on March 1, 1920, re-entered the contracting field by organizing the Electrical Engineering and Construction Company, in company with J. M. Pilmer and Rex H. Fowler. The company has followed rather closely the early experience of Mr. Payton, specializing in power plant and mine construction. It also has departments for motor, generator and transformer repair and handles new and used equipment. An additional line is pumping equipment and air and electrical compressors. He has been one of the guiding spirits of the State Association of Electragists since its inception several years ago and his interest in co-operation among electrical contractors was recognized this year by his election to the post of secretary and treasurer. He is also serving as president of the Master Electricians' Association of Des Moines.



The Balance Sheet

What It Is and What It Does

Assets and Liabilities Compilation

Classes of Stock Inventory

Banking Aid

By M. S. MacNAUGHT,
Vice President, Barnes-Pope Company, Boston

JUST as the physician verifies his judgment of a patient's condition by reference to the reading of a clinical thermometer, so too the business man may wisely confirm his opinion of corporate health by frequent use of financial guages, particularly the balance sheet and the profit and loss statement.

The balance sheet, which this article will discuss, displays in convenient and conventional form the assets and liabilities of a concern at a definite moment. The difference between the assets and liabilities, assuming solvency, is the net worth, which in the case of a corporation will consist of capital stock, surplus and undivided profits. In the case of a partnership, the net worth gives value to the capital accounts of the partners. The asset portion of the sheet shows the property possessed by the concern, while the liability part shows the ownership of this property.

With a straightforward financial picture in his hands the electrical contractor can study his situation, note his flaws and his strong points, then by proper interpretation reach correct conclusions as to his progress, his solvency, profits and ways to effect improvement.

The actual compilation of a balance sheet is a bookkeeping operation, the necessary data being easily and correctly obtained from any properly planned set of books. Figure 1 shows a typical contractor's statement, with the usual items, and possessed of some virtues and flaws which make it worthy of inspection.

By way of introduction, the hypothetical corporation under consideration does an annual business of from \$150,000 to \$200,000, mostly of a

profitable nature, has a paid-in capital of \$25,000, enjoys excellent credit relations with first class jobbers and is conservatively managed.

Further, the corporation was organized with two classes of stock, preferred and no-par common. The incorporators purchased a total of 250 preferred shares at \$100 each. The no-par common stock was not purchased, but was taken by the promoters in payment for their services, thereby keeping voting control confined to the men who organized the company. As a result, at the start of operations, the common stock had no value whatsoever, for nothing was paid for it. Its value at any subsequent date will depend upon profits.

Cash, the first sub-division of current

assets, should include, in addition to money in the bank subject to current use, petty cash on hand at the office. It should not include any funds in reserve for a special or restricted purpose. Needless to say, a proprietor should constantly watch the magnitude of his cash item, in order that it may not drop too low to safely meet payroll and other continuing payments; and also so it will not become too large without withdrawing a portion to be used more profitably.

Accounts receivable is perhaps the most difficult to appraise or adequately interpret without a detailed inspection of corporate papers and books. In the first place, this item may include many bills which while possibly collectable are to all intents and purposes worthless. Bills you expect to collect but you don't know when should be segregated as "Slow Bills," and accounts which are hopelessly worthless should be written off. If, as sometimes happens, such an account is later paid, it simply re-enters the statement as a cash asset.

In analyzing accounts receivable with reference to net quick asset value allowance must be made for funds which are impounded in construction reserves until some definite future date. A concern may be perfectly solvent on paper, yet may have such a large proportion of its money tied up in this manner that a sudden demand for a large cash payment would find the company temporarily embarrassed. Some attention should be given to the magnitude of reserves, and if a supply of ready cash is essential a bank loan should be arranged on the strength of these reserve accounts.

Merchandise inventory with a value

FIG. 1. CONSOLIDATED BALANCE SHEET
October 31, 1926

Assets	
Current Assets	
Cash	\$ 7,429.64
Accounts receivable	27,291.34
Inventory	2,300.00
Total current assets	\$37,020.98
Other Assets	
Furniture and tools	\$ 920.00
Good will	5,000.00
Total other assets	\$ 5,920.00
TOTAL ASSETS	\$42,940.98
Liabilities	
Current Liabilities	
Accounts payable	\$11,876.56
Dividends declared and unpaid	2,375.00
Accrued salaries	220.00
Total Current Liabilities	\$14,471.56
Other Liabilities	
Capital stock (pfd.)	\$25,000.00
250 sh. common stock	3,469.42
Total Other Liabilities	\$28,469.42
TOTAL LIABILITIES	\$42,940.98

of \$2,300 would attract the attention of an auditor or banker, for, with yearly material purchases of about \$70,000, such an amount theoretically represents only 12 days' supply, according to usual accounting standards. The criticism might be offered that this was too much of a hand-to-mouth proposition. Actually, however, this particular concern could safely carry on with a still smaller inventory.

The contractor would do well to subtract from his listed inventory all except new and standard materials. There is nothing to be gained by assuming that a lot of old junk has some market value—and most of the debris cluttering up contractor's stockrooms is hardly more than junk, either! In time of need the owner could get little more than the value of the metal his odd stock contains.

Another factor in many statements

will value, can the same conditions be duplicated in the electrical contracting field?

In the first place, most important electrical installations are carried out to meet specifications, and rarely exceed in excellence the standards so established. Under such conditions no particular good will is created.

Nor do most electragists have any special mechanical or technical processes to lend a distinctive touch to their individual product. All work with the same tools and all use substantially the same methods and materials.

Accepting the truth of the above, the conclusion may be drawn that the source of practically all good will in the contracting field is vested in the proprietor and depends upon his personality, connections and ideals, the standards he establishes for his workmen—

does that concern continue to draw as much business as in the past? Almost invariably not, for many of the best clients are attracted by the man, not the organization. When he goes his clients follow him, or if he dies they shift their affections to some other man in whom they have confidence.

There is no question but that any successful company possesses some good will and has a certain fixed clientele, but in evaluating this debatable asset it is well to discount the good will inherent in dominant individuals. The conservative course is to write off good will entirely, but failing in that the truth-seeking executive should merely decrease its face value, and in forming his judgment of business conditions deduct enough to reduce this element to the amount he could expect to receive upon selling to a new proprietor.

To determine real assets, furnishings and allied equipment should be written down for the cash they would bring at forced sale. Thus, a desk costing \$100 might bring an actual price of \$35 if sold to supply funds. Accounting practice permits entry of furniture, etc., at nearly cost for the first year, with deduction for depreciation during succeeding years, and while for bookkeeping purposes this may be satisfactory, here again the proprietor should revise the amount listed as an asset to a more reasonable cash value for his own information. In the example, furniture fixtures and tools are down for \$920, a rather conservative figure for the safes, filing cases, typewriters, desks and construction tools of the concern under consideration.

Liabilities

A consideration of liabilities calls first for attention to accounts payable. In its true form it sums up all bills which are collectable against the company. This element should not include notes of any sort, since their special lien entitles them to a separate listing, nor should accounts payable include deposits of money with the company by employees or others, or similar transactions.

The liability under the heading of accrued salaries is not of tremendous importance financially, but it serves to illustrate a principle which is often disregarded. In a corporation the board of directors elects each year certain off-

ASSETS				LIABILITIES			
1. Cash on hand and in Bank.....				16. Notes Payable for borrowed money.....			
2. Notes Receivable.....				17. Notes Payable for Merchandise.....			
3. Accounts Receivable.....				18. Accounts Payable.....			
4. Mds. { Raw Material \$.....				19. Trade Acceptances.....			
{ In Process \$.....				20. Other Indebtedness {.....			
{ Finished \$.....				21. {.....			
5. Trade Acceptances.....				22. {.....			
6. Liberty Bonds and Victory Notes.....				23. {.....			
7.				24. {.....			
8. Total Quick Assets.....				25. Total Current Liabilities.....			
9. Real Estate.....				26. Real Estate Mgt. or bonded Debt.....			
10. Machinery, Fixtures and Equipment.....				27.			
11. Patents, Good Will, etc.....				28.			
12. {.....				29.			
13. {.....				30. Net Worth { Capital.....			
14. {.....				{ Surplus.....			
15. Total.....				32. Total.....			

Sales for year ending.....192..... \$..... Insurance on merchandise \$.....
 Amount of Accounts or Notes Receivable included in the above statement of Assets which were created otherwise than by the sale of merchandise \$..... Are any of the above Liabilities secured?.....
 Are any of the above-named Assets pledged as collateral, if so, state amount and collateral.....
 Accommodation Endorsements \$..... Endorsed Notes Receivable Outstanding \$.....
 Are you the defendant in any law-suit? If so, state nature and amount involved.....

Fig. 2—This Sheet When Properly Filled Out Will Tell Your Banker What He Wants to Know

could be fairly criticised—namely the valuation placed upon good will. This intangible asset is a particularly fickle element in contracting operations.

Granted that a factory, through perfection of mechanical and technical processes, sheer quality of product, and effectiveness of advertising, can build up an enduring clientele having a good

and, too, the ability of those workers to reflect in their efforts their employer's instructions. In other words, electragist good will, while a very real item, is a measure of a person's value, not of the drawing power possessed by a firm name alone.

Take a given successful contractor, remove him from his company, and

cers designated by the charter, and at the same time votes them a definite salary. If, for any reason, these officers do not draw the full amount weekly, the balance remaining unpaid up to any date must appear as a liability, since the company legally owes that amount of money to the persons concerned.

An item for \$2,375 as dividends declared, but not paid, emphasizes the fact that as soon as directors vote payment of a dividend the total amount involved becomes a current liability and is a direct obligation of the concern. In fact, it should be noted that any order for financial payment which is legally adopted by the board of directors is binding upon the corporation and is shown on the statement as a separate element.

Capital Stock

Under the heading of other liabilities, capital stock is valued at \$25,000. This is the actual paid-in value on 250 preferred shares outstanding, in addition to which are 250 shares of common with a book value of \$3,469.42.

This evaluation is assigned to the common stock in order that the total of liabilities may balance the total assets. As profits accrue they will add to this common stock value; and as losses occur they will decrease this sum. If at any time the financial condition is so bad that current liabilities are top-heavy the common stock will lose its value, and the book value of the capital stock will decrease from its paid-in amount until the two sides of the balance sheet do balance.

If losses or other destructive conditions so deplete the assets that the capital stock has a value of exactly zero, then the firm is theoretically just solvent. Any further reduction in assets will prevent a balance, and indicate insolvency. To express the matter in a different way, a company is solvent, on paper, so long as all its assets exceed all the liabilities exclusive of capital stock. Of course a concern which is just barely solvent would be unable to distribute any money to its stockholders upon liquidation.

If the original common stock issue is sold for cash or other valuable consideration both preferred and common stock may be inserted at their paid-in or par value amounts, and the excess of assets over liabilities may be included

under the heading of surplus. This is the usual method of handling the matter in large corporations, but in many small concerns the preferred alone is paid for, the common stock being distributed regardless of financial investment so that voting power and control may be kept by the promoters. If such common stock has no par value it is convenient to combine the surplus with it, giving it a book value dependent upon the profits of the company. If the common stock has a par value it should be entered at that price, and a separate surplus item established. In this latter case the book value of the common stock equals its par value, plus whatever surplus there may be.

FIG. 3. WEEKLY SUMMARY

Week ending:	
Cash on hand	\$
Payroll for week	
a. Direct labor	\$
b. Office	\$
Current assets	\$
Current liabilities	\$
Accounts receivable	\$
a. Reserve on jobs	\$
Accounts payable	\$
Note due	for.....\$

JOB COST SUMMARY

Job Name	Labor to date	Material to date	Contract Value
a.			
b.			
c.			
d.			
e.			
f.			

Accounts receivable 30 days old:

- a.
- b.
- c.
- d.

The balance sheet must be prepared when a bank loan is desired, and usually also when preparing tax returns, but the electragist should not use it for these purposes only. It is of vastly greater importance to the contractor himself than it ever can be to an outsider or the government, for it is the written record of his progress. Provided he uses accurate figures this instrument demonstrates his solvency, gives him a clear picture of any undesirable conditions, and enables him to watch the functioning of his finances.

Any unwarranted increase in his accounts receivable will plainly warn him that too much money is tied up in slow bills, or reserves. A startling rise in inventory will tell him that ill-timed

purchases are being made, or that costly merchandising mistakes have occurred.

Distortion of current liabilities from a normal ratio to current assets should call for careful investigation. Ordinarily, accounts receivable should be about twice accounts payable. That, after all, is purely good judgment, for such a margin assures a comfortable factor of safety if some of the receivables prove to be mere paper assets.

The contractor who solicits banking aid should so administer his construction operations that they will give him a good profit in order that:

- a. His cash and accounts receivable may be adequate.
- b. His inventory may be conservatively priced.
- c. His furniture and tools may be reasonably valued.
- d. His good will may be written off, or at least given a nominal valuation.
- e. Notes payable may be small.
- f. Accounts payable may be comparatively low.
- g. Capital stock may appear at full value, with a fair surplus for good measure.

When compiling a balance sheet for presentation at a bank the elements listed in Figure 2 should be included whenever they are applicable. If assets and liabilities are segregated under the headings shown they will be in condition for ready analysis by the banker. As a matter of fact, many banks now have their own standard blank forms giving the exact items for which they wish figures.

The electragist who desires to keep in close touch with his finances will find that a mimeographed or printed sheet similar to that shown in Figure 3 is an aid. Such a summary, made up weekly by the bookkeeper, will give the salient facts in compact form, and present a graphic survey of every contracting detail involving money.

Supplementing this will be the monthly balance sheet, and also if possible a monthly list showing in detail all debtors and creditors of the company with the sums involved. In this way no detail worthy of the proprietor's attention is likely to escape scrutiny.

The Electragist Movement

(Continued from Page 22)

prepared, providing a legal means of making our national standards the basis for local regulations.

The provisions of the Uniform Electrical Ordinance do not interfere with the power of the municipality to control its own rules and regulations, but it makes the regulations as laid down in the National Codes "prima facie" evidence of the most approved methods for safety to life and property and thereby gains for such rules legal standing. Rules under the local ordinance required by purely local conditions are not prevented.

In general, however, ordinances should contain as few requirements, in addition to those of the National Electrical Code, as will satisfy the needs of special local conditions. As rapidly as possible the National Electrical Code is being made to include more specific definition of the application of its rules to meet special requirements and the industry is hopeful that more and more uniformity in code making will result throughout the country.

Minimum Standards vs. Best Practice

There needs to be kept clearly in mind the difference between that standard which may be enforced by regulations with police power behind them and other standards in which the question of quality, above the minimum requirements for protection from life and fire risks, are involved. The National Electrical Code provides minimum requirements in the interest of public safety. It can not represent the standards which a large part of the public desire, defining what constitutes the best practice in installations under any and all conditions.

Such standards can not be enforced by police power, but must depend for their influence upon public education, respect for their source and the support which they receive from the designers of installations and the installers of the work.

The Association of Electragists, International, is therefore preparing the "Electragist Standards for Wiring Installations" to define what constitutes best practice in wiring installations. In determining such standards the considerations involved are those of safety

to life and property, permanency, adequacy, efficiency, and economy of operation, with proper regard for cost.

These "Electragist Standards for Wiring Installations" when completed will be placed in the hands of architects, engineers, and contractors throughout the industry as a much needed standard of best practice, but they are not intended as regulatory rules governing those who still desire installations which meet minimum code requirements for safety against life and fire risks.

4. Trade Relations

The local electragist association should set up contact with the following local groups:

Central Station
Jobbers
Electrical Inspectors
Architects and Engineers
General Contractors.

Meetings with these other groups should be regular and a frank discussion encouraged of all points of differences. Most conflicts of interests between groups are the result of thoughtless practices allowed to continue because they have not been properly discussed and understood. Frequently the straightening out of such trade traffic tangles means give and take on both sides and only a fair and open discussion, with mutual respect for all interests, can bring well balanced trade relations.

Trade relations affect the interests of the individual, but the adjustment of them depends upon group action. The individual who does not belong to his association is not only doing nothing himself to correct unsatisfactory conditions, but he is delaying the efforts of others to correct them for him by weakening the group through his non-support.

5. Development of Electragists' Markets

The annual volume of wiring done in this country reached its highest point more than a year ago, and with the gradual absorption of the old house wiring field we have passed the peak in our opportunity for easy volume of new house wiring business, and if we are to hold our own in the future we have got to learn how to do a better selling job.

This better selling job means more

complete wiring of every building, to provide a greater number of outlets, adequate capacity of feeders and better provisions for future extensions. It also means a real selling job in going back over the old houses we have already wired, and rewire and refixture them up to date. Likewise, there is still a big job to be done in modernizing illumination and power equipment in commercial and industrial installations.

No group in the industry is more vitally affected by this problem than the electragists, and much depends upon the opening up of this new field of more adequate wiring to replace the rapidly disappearing field of unwired old homes.

This job requires a new type of selling, a new character of organized effort; it needs the serious thought of every individual electragist that he may stake his claim in this gold mine of business awaiting those who find the way to open up the veins. It is a job for the local electragists' associations, cooperating with the local electrical leagues of the country.

Market development is an industry problem in which every group is vitally concerned. Perhaps no other problem more clearly shows the interdependence of the various groups today, and the answer will lie in their ability to meet the problem with consideration and respect for the interests of each other, and, with a united front, work together in selling the public complete electric service.

North Carolina Men Elect Thompson

At an organization meeting of the North Carolina Electrical Contractor-Dealers' Association held at Raleigh on March 18 F. E. Thompson of the Thompson Electrical Company of Raleigh was elected president for the ensuing year. A. W. Webb of Asheville was elected vice president and H. G. Gibson of Laurinburg secretary-treasurer.

Birmingham Electragists Organize

Birmingham, Ala., members of the Association of Electragists, International, have organized the Birmingham Electragists in that city.

"It is amazing how quickly profits on several jobs can disappear through one mistake in buying The two things to keep in mind are: Can these devices be sold to my customers and, secondly, will they stay sold? . . . A real bargain is about the rarest thing in the world."

Canny Buying Is As Important As Good Salesmanship

By JOHN T. MACINTYRE,

General Manager, Austin Electric Supply Company, White Plains, N. Y.

THE contractor-dealer whose business is of small or moderate size usually has to be both the selling force and the purchasing agent, and since the business is vitally dependent on sales volume he is apt to pay much more attention to selling than to buying, which in most cases means that the best in prices and conditions are not always had nor is the best judgment always used. As a result he learns how quickly the profits on several nice jobs can disappear through one mistake in buying.

For instance, a man figures closely and works hard to make a \$50 profit on a \$500 job. Then he turns around and spends perhaps \$150 on a line of electrical fixtures that refuse to move and he finally has to almost give them away in order to get rid of them. Or he puts in a line of appliances which are replaced before long with new models. Or he overbuys on material for some job and a lot of money is tied up in stock that may or may not be useful at some later date.

Lowest Price Not Necessary

So, while getting a profit on the jobs you do and the merchandise you sell is important, it has always seemed to me just as important to buy carefully, economically and sparingly. It isn't necessary always to buy at the lowest price, either, in order to accomplish the ideal in the previous sentence. Theoretically the man who buys at a low price and sells for a high price will make money, but it doesn't always work out that way. There are too many other factors to consider, such as the good will of your customers, future sales, the overhead on storage space, the investment in stock, sales resistance and other matters that

have very little to do directly with prices.

The very first thing to think of in purchasing is the market for your goods, the sort of locality in which you are situated and the type of people who are your customers. If your clientele should be in the middle class, the families of skilled workmen, there will be considerably more of a market for washing machines and vacuum cleaners than there would be in a district where there are a great many boarding and rooming houses. You will be able to sell good, substantial types of fixtures but probably very few of the highly ornamental and expensive kind. If you are in a suburban community of home owners who are well-to-do but not wealthy you can sell not only washers and cleaners, but grills, toasters, percolators, all sorts of hollowware, refrigerators, high-class fixtures, almost anything and everything electrical because your customers have money to spend and, the home being their first interest, they are willing to spend it on domestic comforts. But in a metropolitan apartment house district the complexion of the whole thing changes again. There won't be much market for washing machines and other major appliances or for fixtures, except when buildings are first erected or are remodeled, since tenants generally will not spend their own money on fixing up their landlord's premises. This ought to be a fine market for tableware and for portable and table lamps and a fairly good market for cleaners.

It is not enough, either, to determine the sort of a district you're in and then stick to that idea. Localities are constantly changing so that the live retailer must always keep pace with the change in his public. There was a time not so

very many years ago when parts of New York City were almost entirely composed of residences. Almost overnight they have changed into apartment-house centers and the type of population has changed also from the homeowner to the renter who is not a very good prospect for the larger appliances. In other sections of the city the co-operative apartment is becoming prevalent and these apartment dwellers should constitute the finest type of customer for expensive fixtures and the major appliances. Changes like these are occurring in every city and town and the merchant dealer's buying must always be adjusted to the new conditions.

The Salesman's Value

That brings up the subject of salesmen who can be either the contractor-dealer's best friends or his worst enemies. The salesman knows generally a great deal more about the product he is selling than you do and you can learn much from him along that line. Very often he will know what has been done in other markets with that particular device and how other dealers have handled it; oftentimes the points he brings out in his sales talk to you can be used in your sales talk to your prospects. But it must always be remembered that you know more about what your market will take and what it won't than anyone who is not doing business directly with your public. Your own experience and knowledge are all you can use to counter balance the arguments of the salesman. Once you are satisfied that the quality of the product is all right the only two things to have in mind are: Can these devices be sold to my customers and, secondly, will they stay sold?

It is said that friendship and business do not mix and this axiom is correct most of the time. Yet we are continually doing business with our friends. If a salesman calls on us often enough and has a good personality and a good firm behind him we grow to have confidence in him; and confidence leads to friendship. However, these men are, after all, salesmen and their first duty is to their employer, with the result that while they tell the truth about their product they are perhaps too enthusiastic about its possibilities in our market. In fact, that is the trouble with most salesmen—they are too optimistic about what the contractor-dealer can accomplish. There again the buyer has to rely solely on his own judgment and whatever opinion he has arrived at by studying his own situation.

Novelties

Ordinarily the contractor-dealer knows his staple lines of appliances and fixtures so well that he is in no danger there from the over-enthusiastic salesman. But novelties are something else again. In the first place the public is still in ignorance of the possibilities of the economic use of electricity and almost any device would have a wide sale if people could be taught its value. New applications are being discovered every day and new devices are being put on the market by the hundreds. Some of these will catch on, others will not and it is a difficult thing for the dealer to decide what to stock.

The whole situation really revolves around the dealer because without his help the manufacturer cannot market the device. The process is something like this: Someone invents a new appliance—an electric cigar lighter for instance—feeling sure it is what the public wants. Then they put a lot of money into production of it and after that begin to figure on distribution; generally the jobber refuses to handle it until a demand is created. The only thing to do then is go direct to the dealer and induce him, somehow, to do part of the missionary work. If it is a good thing the dealer ought to take it on. But how is he going to judge of that?

There are a number of ways, none of them infallible, but they do help. Is the device made sturdily and has it a handsome appearance? What is the

reputation of the manufacturer? Has the device a pretty general or a restricted application? Does it appear to be a good value for the price? Is there a published list price or can you determine your own mark-up? And, last and most important, what is the manufacturer going to do or what is he doing to educate the public to the use of the device? If he plans a national advertising campaign or a campaign in local papers he is in earnest and it might pay to handle his product. But if he expects the dealer to do all of his missionary work, to establish him so that the jobbers will finally come to terms, I would think a long time before tying up with him.

This thing of flooding the market with new devices is all very well, but each manufacturer ought to have a well-defined and workable method of distribution and publicity. Otherwise the new application is a drag on legitimate, worthwhile business and since it is the contractor-dealer through whom most of these products finally arrive it is up to him to know when and where to put the brakes on and then to do it.

Bargains

Bargains are something else on which the contractor-dealer often gets hooked. A real bargain is about the rarest thing in the world and that is what was meant when I said that buying at the lowest price is not always a sign of shrewdness. Whenever anyone comes to you, offering something at a discount away below normal, be careful! Of course it is possible that some manufacturer is over-produced or that some jobber is over-stocked and wants to cut down his inventory. But that doesn't happen as often as it is supposed to. More likely that article has failed from the volume sales standpoint or is to be replaced by a newer and better model, in which case you have to lower prices in your turn, making your apparent big profit dwindle down to a very ordinary one, and also you encounter greater sales resistance in getting rid of obsolete models. Or the manufacturer is about ready to reduce his price anyway and you have gained nothing after all. Perhaps you have even bought a pretty large stock, because of the low price, and have reduced your turnover without getting the expected increase in profit on the lot.

Another important phase of good buying is keeping informed on new products. If you wait for a salesman to call to tell you about some device you may be three or four months late in obtaining it. The best way at present of keeping in touch with the latest developments is to watch the trade publications, both the advertisements and the editorial section which all these magazines devote to articles which are just being put on the market.

The manufacturers of course spend hundreds of thousands of dollars on direct-mail advertising, but the very volume of this material makes it difficult for the contractor-dealer to use it to its full advantage. Every man in this field knows that he gets enough folders and letters and catalogues every day to keep him busy for two hours—if he had the two hours to look through them. Perhaps if the manufacturers were to adopt a standard form of catalogue, standard in size and in listings, the dealer would find some way to file this information so that he could look it over quickly and refer to it when necessary. But each advertiser tries to go his rivals one better by making his direct-mail matter unusual and attention-catching in size or appearance and by this time the unusual has become the usual. So much so that the wastebasket catches most of it. In fact, many thousands of dollars worth of this material annually never get beyond the wastebasket in the dealer's office or store.

Buying Direct

No discussion of buying is complete without something on the subject of buying direct from the manufacturer. There is still quite a bit of it done, but the experience of this company would indicate that its disadvantages far outweigh its advantages. The only advantage is price and in order to get low prices it is necessary to buy in large quantities. Few contractor-dealers are in a position to get a fast turn-over on large stocks. Everyone knows what that means—money tied up, rent for warehousing, insurance charges, danger of obsolescence, depreciation, etc. These expenses can very easily mount up to a point that far overbalances the saving in the original price.

Getting deliveries from the manufacturer is another source of difficulty. No manufacturer can be as familiar with

routes and delivery charges as a jobber who cultivates a small territory very intensively. And when a contractor-dealer wants an article he usually wants it in a hurry; if he has to wait two or three weeks or a month he is going to lose sales of the item and profits that should be in his pocket. If goods are lost in shipment it will take just as long again to get a supply from the manufacturer. In buying from the jobber, on the other hand, deliveries can be obtained in from twenty-four to forty-eight hours in most localities and because of shorter hauls, fewer points of transfer and a more thorough knowledge of local shipping conditions, goods shipped by a jobber are seldom lost.

Some contractor-dealers believe that by shopping around among the jobbers they obtain better prices, but it is doubtful if they gain very much in the end by playing one jobber against the other. If you have adopted this attitude toward the jobber when work is plentiful and money easy he is not likely to feel obligated to help you very much when you are in temporary difficulties. But if you have strung along with him, given him a chance to make a fair profit and placed enough of your business with him to make a respectable total nine times out of ten he will take care of you in a crisis, extend his credit terms from sixty to ninety or a hundred and twenty days and do everything in his power to get you back to the status of a prosperous good-paying customer. And even under ordinary conditions his service to customers who buy a large amount of materials from him will be better than to those whose purchases are more or less casual and dictated by price alone.

Hand-to-Mouth

It is not meant by this to imply that any individual order need be large. As a matter of fact jobbers we think are realizing that hand-to-mouth or rather job-to-job buying by their customers is just as much to the jobber's interest as it is to the contractor-dealer's, because whatever keeps a contractor-dealer business in a healthy condition and able to discount its bills will have the same reaction on the jobbing house. The jobber would much rather have things that way than to sell every customer a big invoice and take a chance on getting his money.

Continuous conservative buying ought to be the cornerstone of every up-to-date contractor-dealer business and the smaller the stockroom as a rule the more successful the contractor. In the contracting end of the business a little foresight will make it possible to have nearly all the material for every job laid down at that job from the jobber's delivery truck without ever passing through the stockroom at all. We are of course thinking of construction work and not of a small jobbing contractor. Merchandising stock naturally must be larger, but even then there should not be more than a few samples of each line which is carried, except at certain periods, notably around Christmas. Deliveries from the jobber will take care of almost any emergency, provided the buying policy of the contractor-dealer has kept him on good terms with the jobber.

This is the real answer we think to rapid and numerous turnovers and while margins of profit may be smaller,

the number of profits taken is what counts in the long run.

October Highest Month in Radio Stocking

Buying habits of the owners of radio receiving sets are traceable by information just released by the National Electrical Manufacturers' Association.

In a survey covering the 12 months of 1926 the radio division study shows that the favored time for wholesale bulk movement of sets was October 1. The months of April, May and June were low for all classes of radio sets and accessories. This has been attributed to indifference to radio by the general public while busy with golf and other outdoor sports which divide leisure time during the warmer months.

Retail sales are behind the wholesale movement but how far is not known. It is not possible to tell from the data collected how merchandise flows out of dealer's stock—only into it.

Watertown Electrical Contractor Finds Job Time Form Valuable in Event of Customer's Complaint

WHILE the job time form shown here is valuable from the standpoint of costing time and material jobs and also in checking up on the efficiency of workmen on contract jobs, Harold W. Benoit, proprietor of "The Electric Shoppe," Watertown, N. Y., has found it of much help in adjusting the complaints of customers who feel that charges are too high. This is due to the company rule that wiremen must have the slip countersigned by the customer before it can be filed in the office.

The wireman checks his starting time and his finishing time on the quarter-hour sub-divisions of the slip and also indicates the type of work done for the customer, together with a brief outline of the details of the job. At the end of the day's work he shows the slip to the customer, explains it and then asks that it be countersigned by the latter to certify that the work was done as noted.

One time card must be made out for each job and turned in on the following morning.

THE ELECTRIC SHOPPE

Date.....

Workman.....

For.....

Address.....

Fixtures..... Wiring..... Entrance..... Repairing.....

Work Done.....

A. M.					P. M.				
7:00	7:15	7:30	7:45	8:00	12:00	12:15	12:30	12:45	1:00
8:15	8:30	8:45	9:00	9:15	1:15	1:30	1:45	2:00	2:15
9:30	9:45	10:00	10:15	10:30	2:30	2:45	3:00	3:15	3:30
10:45	11:00	11:15	11:30	11:45	3:45	4:00	4:15	4:30	4:45
12:00	Total Hrs.				5:00	5:15	5:30	5:45	6:00

If the customer has any complaint to make about the amount or the quality of the work he will register it at this time and adjustments can be made while the circumstances are still fresh in his mind.

Each day's job is represented by a time card which is turned in on the following morning. These are filed every Friday and can then be used in computing the wages of each journeyman and the costing of each job.

The Electrical Installation in Roxy's New Theatre

(Continued from Page 29)

conduit would need three 4-inch conduits, and the latter requires nine 500,000 cm cables, and if run in conduit would need three 3-inch conduits. The run from the 50th Street A. C. switchboard to the starting equipment and from that to the motors involved so many changes in direction that had it been installed in conduit, it would have consisted of a series of large pull boxes connected by comparatively short sections of conduit. The electrical contractor went a step further and eliminated the conduit, making the entire run a continuous pull box, or a sheet metal duct, with a removable cover. This eliminated all laborious drawing in of the unwieldy cables, the cables simply being laid in the open ducts on slate spacers. In the portions of the run which are in the basement floor, the sheet metal ducts were omitted, their place being taken by open trenches covered with checker plate. The cable in the trenches is lead covered. Fig. 7 shows one of the ducts rising from a trench to the motor terminals, and Fig. 8 is a diagrammatic representation of this installation. The ducts are No. 10 g-a, and are black enameled. They are grounded.

Foot-light Design

Another instance in which an improvement was made in the mechanical design on a piece of electrical equipment is the foot-lighting unit, designed by the manufacturer of the control board. A section of this unit is shown in Fig. 9. Substantial cast iron brackets are spaced every three feet, supporting a 7 1/2 inch wide by 1-4 inch thick checker plate which in turn is stiffened by a continuous angle. Thus it is no longer necessary to step over the foot lights because it is designed to be walked on.

Another interesting device is a flush type floor pocket with colored pilot lights over each receptacle, indicating the color of the extension lighting the receptacle is intended for. The receptacles vary in capacity from 30 to 100 amp.

The "Kino-booth" is located in a notch in the center of the first balcony. There is enough headroom between the floor of the balcony and the ceiling be-

low to conceal the booth due to enormous girder which stretches unsupported on a diagonal from 50th Street to 51st Street. No expense has been spared to make this room as safe and comfortable as is humanly possible. There are five motion picture projectors besides six 125-amp. spot lights. All wiring is concealed and runs directly into the apparatus it serves. The arc resistors are located in a separate, well ventilated room to one side, and the distribution panels in a separate room to the rear of the booth, thus reducing the fire hazard to what can hap-

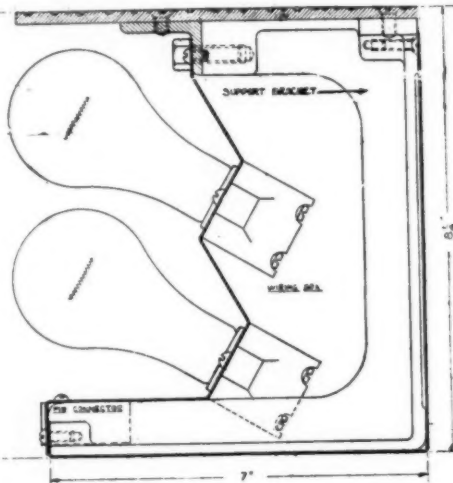


Fig. 9—Section of Foot-light Unit

pen at the projector only. As previously stated, energy is supplied to this booth for lighting and power from both the 50th Street as well as the 51st Street service, and any machine can be connected to either supply by means of a double-throw switch. Two projectors are also located on each side, and in back of the stage.

An unusual use was made of the five street lamp posts which the city gave special permit to erect on 50th Street. They consist of cast iron ornamental columns, the heads of which consist of lanterns which are illuminated in the usual manner. However, in the hood of the lantern there is concealed a flood-lighting unit which illuminates the imposing 50th Street facade of the theatre.

An entirely remote controlled 3,250,000 c. p. searchlight with a 36-in. parabolic reflector is mounted on the roof.

It may be of interest to get an idea of what uses electricity is put to in a building of this kind. A listing follows:

POWER

Curtain lift 5 hp.

Cyclorama lift 5 hp.
(semi-circular background)
Elevating stage 25 hp.
Elevating orchestra platform 25 hp.
Elevating organ consoles 3-5 hp.
Elevating piano platform 5 hp.
Organ blowers 5-40 hp.
Motion picture projectors hp.
Refrigerant compressors (air conditioning) 250-350 hp.
Air compressor 1 1/2 hp.
Spray pumps (air conditioning) 30-60 hp.
Ventilating fans 1/4-50 hp.
Flasher 1/3 hp.
Passenger elevators 15-50 hp.
Fire pump 25 hp.
Motor generator set (for telephone) ..
Motor generator (for stars in sky effects)
Vacuum heater pump 5 hp.
Bilge pump 1 hp.
Vacuum cleaners 10 hp.
House pump 7 1/2 hp.
Cooling tower pumps 40 hp.
Ejectors 3 hp.
Air heaters (for organ chamber)
The total connected power load is 1,600 hp. distributed over 60 motors.

LIGHTING

Fixtures
Cove lighting
Stage lighting
Moving picture projectors
Flood lighting
Tube signs
Attraction board (illuminated letters)
Searchlight

BUILDING UTILITIES

Electric clocks
Fire alarm and watchman clocks
Private telephone
Signal systems (buzzers and indicating lamps are vital points)
Public address network
Vitaphone network ("talking movies")
Microphone system for broadcasting
Seat occupancy indicators
Ticket recording system
Organ keyboard
Air heaters in lavatories (air towels)

Over Seventeen Hundred Enroll for Jobbers Salesmen's Course

The course in the problems of the contractor-dealer prepared by the Electrical Supply Jobbers' Association for their member company salesmen is proving very popular according to recent advices from O. Fred Rost, chairman of the committee in charge of the preparation of the material for the course. By the middle of March over 1,700 had enrolled for the course.

Among the fundamentals which the men will be schooled in are estimating according to the plan of the Association of Electragists and accounting following the Standard Accounting System. Copies of estimating booklets and accounting manuals, compiled by the Association of Electragists, are being placed upon request in the hands of those who enroll.

Red Seal



Progress

ONE of the most encouraging circumstances in the drive to Red Seal the United States is the growing popularity of Red Seal wiring with the speculative builder. Heretofore his tendency to skimp on the electrical installation has been the bugbear of the housewiring contractor. But now that speculators see that a certified job of wiring will help them to sell or rent the house they are going over to Red Seal wiring in increasing numbers.

In Pittsburgh one builder has made application for Red Seal certificates on twenty homes nearing completion and has announced his intention to have Red Seal wiring in ninety more houses which he plans to build during the year. The Electric League of the Niagara Frontier, operating in Buffalo, has recently awarded Red Seal certificates to three apartment buildings, one of twenty-two apartments, another of twenty-four apartments and a third of ten apartments, the latter being in a remodeled building. In Kansas City and Detroit much the same thing is taking place, except that the apartment buildings are not so large as those in Buffalo.

Buffalo, incidentally, has raised its Red Seal specifications to some extent and so also has Toledo. It is reported that the Hudson Valley Electrical League is considering the same action.

Higher Standards

That specifications may safely be raised once the public is educated to the Red Seal is amply proved by the experience of the Electric Service League of Toronto. A resume of the outlet schedule there shows that with each succeeding year of Red Seal house-builders are installing more and more outlets. In 1925 the average number of outlets per house there was 45.5, while in 1926 it jumped to 56 and in the first two months of 1927 went to an average of 75 per house.

The spread of Red Seal territory continues steadily. During the month a license was granted to the North Shore Electric League, operating in the suburban territory just north of Chicago and

applications for licenses were received from Richmond, Va., and Birmingham, Ala. New Orleans has voted to operate the Red Seal plan and, it is expected, will soon make application for a license. Inquiries have recently been received from Portland, Ore., Dubuque, Ia., and Mankata, Minn.

In the Field With Red Seal

California: The California Real Estate Association has arranged with the California Electrical Bureau for a Red Seal exhibit which will be taken over the whole state during 1927, and shown to every local real estate board.

Denver: An apartment house of 18 suites has been slated to have Red Seal wiring.

Chicago: The most recent Red Seal meeting was attended by 417 persons.

Grand Rapids: Four Red Seal model homes are to be on display here during April. Three of them are the property of one builder and, being side by side, will be exhibited under

novel conditions. The first will be unfinished so that all the wiring in the walls can be seen. The second will be finished so that outlets and switches may be seen, and the third will be completely finished and furnished so that the public can see that a Red Seal wiring job's ultimate aim is proper illumination and convenient use of appliances.

St. Paul and Minneapolis: The Twin Cities soon will begin on a ninety-day intensive campaign to bring the Red Seal before the public.

Kansas City: During the eight months in 1926 that the plans were operative 4 per cent of the homes built were Red Seal. In January and February 1927, 10 per cent were Red Seal. They are now going to try to raise this percentage through more intensive work with builders.

Toronto: To cover the field more thoroughly with its inspection system the Electric Service League is contemplating the addition of two more men to its field staff some time in the spring.

Department Store Co-Operation



DURING the recent Pittsburgh Industries Week the Red Seal was on display in the window of Pittsburgh's leading department store. The display was arranged by J. H. Van Aernam, manager of the Pittsburgh Electragist League.

The Electragist

Official Journal of the
Association of Electragists—International

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The Red Seal and Contractors

Records show that the organized electrical contractors are not making much headway with Red Seal installations. In fact, very few contractors have more than one job to their credit. The speculative builder apparently has been easier to sell on Red Seal than the electrical contractor.

Why this apathy on the part of the contractor? Of course, the speculative builder buys a Red Seal job the same as any other—on the basis of price. In fact he is safer buying a Red Seal job on price than he is in buying a less adequate job, because of the dual inspection. There is less chance for a contractor to make a reasonable profit on a Red Seal job for the average speculative builder than for the less adequate job.

On the other hand, there are lots of homes being built that are not of the speculative kind. If the league representatives can persuade such owners to have Red Seal wiring why can't the contractor? A Red Seal job means a larger job.

Working With Architects

There was a man who gave as the reason for his success the fact that he always asked for what he wanted. When asked if he didn't meet with a number of rebuffs he said "Yes, but think of the number of times I was successful."

Many architects have gotten into that way of thinking. They ask for anything that comes into their head on the theory that they might get it, but if they don't they haven't lost anything. Only recently a Boston electrical contractor reported that a number of architects were demanding that contractors buy the plans used in preparing estimates. This is not fair and responsible contractors will not tolerate such a practice. There is no objection to architects demanding a deposit on plans from contractors he does not know, said deposit to be returned with the plans. It costs enough to estimate anyway without paying further for that privilege.

In some cities it is still customary for the architects to include temporary wiring and maintenance in the electrical contract. The New York contractors have long refused to contract for such work on the basis that it was impossible to estimate it. A joint meeting with the architects convinced them of the reasonableness of this argument. The contractors of any other city can accomplish as much.

Some architects still call for unit prices in order to con-

trol the extra work, but the latest along these lines are "floating quantities." The quantities are specified and furnished and there is almost always enough to take care of extras. The prices quoted hold for all material used up to the amount specified. What isn't used isn't paid for.

Of course, not a one of these demands is made by the architect until after one or more unfavorable experiences.

Unsuccessful bidders have neglected to return plans or if they did they were incomplete or in badly damaged or marked-up condition. Where temporary wiring and maintenance was on "time and material," the same as on extras, it seemed like an opportune place to make the profit that should have been placed on the job proper.

It isn't necessary for architects to make such stringent rules to protect themselves. Bad practices on the part of contractors should be regulated. The best kind of regulation will be that proposed by the contractors themselves and which is acceptable to the contractors.

Therefore, when architects begin making demands don't accept them until after there is opportunity for study and the creation of acceptable proposals.

Our Friend, the Inspector

In how many places is the head of the inspection department considered as having a place in the electrical industry? Most leagues welcome him and a few contractor-dealer organizations as well. But why not more?

The electrical inspector is the contractor's friend. He will be a better friend, the better he knows his contractors and they know him. If he is a party to all of their deliberations, as an insider and not an outsider, will he not be on their side?

The inspector is in touch with all the local contractors. He can help spread news about a local association, if he is interested in it. He will work for the things the association works for if he feels that he has a part in their making.

It is true that the chief inspector is in a sense a policeman. He has to pass sentence on the work of the contractors. Nine times out of ten he does not put violations on work because he is hard boiled. Most inspectors that we know are real human.

Get to know your inspector away from his office. He has problems same as everybody else. Learn what they are, teach him yours. Soon you will learn, if it isn't known already, that your inspector is a "regular fellow" and

that a whole lot more can be accomplished in lots less time when you and he are working together.

Distribution Centers for Housewiring

The common practice in housewiring is to run all branch circuits from the service. With the number of circuits increasing and with old house rewiring coming along, might it not be more economical to run the branch circuits from a panel located on the first or second floor of the house?

As we continue to find more uses for electricity in the home the need for a larger number of circuits will become more apparent. It will be a much simpler matter to run such circuits from a distribution panel on the first or second floor than to run to the far corner of the building down in the cellar. There will be an added convenience to the home owner having such a layout because of fuse accessibility.

It will make an interesting study to find out the minimum number of circuits at which such a layout becomes economical. The feeder, of course, should be of the same size as the entrance wires and there should be ample provision on the panel for spares.

Don't Sign Without Reading

Recently some electrical contractors signed a labor agreement stating that any journeyman would have to re-install on his own time any work that he had done not in accordance with the Code, but that the union was to be the judge of whether or not the work was properly installed.

Not so long ago a number of contractor-dealers wrote us that they had been swindled by a dish washing machine agent. They had signed a contract to purchase a number of machines and they were told they could return the machines if they were not sold in a certain time, while the contract stated that they could be returned at the end of the agency period which was stated elsewhere to be one year.

In both cases the contractors "thought" that the contract was very much in their favor—later they found the joker.

A contract is a binding document. Don't sign until you have first read it over. If you are ever in doubt don't sign.

Multiple Outlets

To make every convenience outlet a duplex outlet is a good plan, but to take a number of outlets from one outlet is a horse of another color. There are products on the market designed to increase the number of outlets in a home without changing the permanent wiring by making a convenience outlet a service tap for a number of outlets.

New ideas along these lines are being urged by those interested in building energy consumption. How far will they go? If permitted, can they be restricted?

Our National Electrical Code has been built on a reasonable restriction of the branch circuit load. Will this be possible with free use of multiple outlets?

Registration vs. License

Should electrical contractors be licensed or should they be registered? This question is uppermost in the minds of many people today. That there should be some way for the public to know who is competent to install wires is without argument.

To many it will seem as though we were hairsplitting to debate the relative merits of the two terms when the result to be achieved is the same. But are we?

To license is to permit one to practice, to register is to enroll. Thus it will be seen that the former term—"license"—has in it the hidden element of restriction, while registration means identification as competent. The license idea carries with it the idea of fees for revenue—registration has no such inherent implication.

It has been put forward that a State has no fundamental power to compel one to take out a license to engage in electrical contracting; but that it may compel all who do such work to register themselves. It is doubtful if there is any truth to such a claim. The State has a right to license all those whose occupations are such as to present a hazard to public health, morals or safety and surely the installation of electric wiring presents a safety hazard.

There is another side to the question, however, which is not so academic and which will appeal to the electrical contractor as much more practical. There is a grave question whether a State may license a master electrician or contractor without requiring a license of the journeymen.

The licensing of journeymen apart from all its other more or less inherent evils involves a very serious element of illegitimate competition. A journeyman with a license has an advantage over the public in that the lay customer does not know that such a license has a limited value.

Under a plan of contractor registration there would be no restriction of numbers; other than to become registered one would have to satisfy an examining board as to his competency and have a place of business. It might even be his home or garage, but it would mean that the holder of a card of registration was not a floater.

The use of the term "license" has come into dispute undoubtedly because of the attempts so frequently made to keep people out of the business. While it is true that the price cutters have been responsible for the poorest kind of work, still it must be remembered that one of the fundamental laws of this country is that we cannot limit competition by legislation. The public feels that with inspection it can prevent the price cutter from making unsafe installations.

The day is passed when we can expect to secure legislation of competition by the assessment of heavy fees. It will be found that by law a fee for licensing or registration must be governed solely by the cost to the government of providing such a license and the policing thereof.

Anybody can engage in any business in the United States that he wishes provided he can, where necessary, satisfy the proper authorities that he is competent.

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St. Petersburg (C)	Gardiner Blackman	P. O. Box 992	Toledo (C)	Fred C. Dunn	Builders' Exchange
Tampa (C)	P. F. Lyons	73 Walton St.	Dayton (C)	Clarence Carey	1107 South Brown St.
GEORGIA			Massillon (C)	F. D. Mossop	c-o Mesco Electric Co.
Atlanta (C)	B. K. Laney	Byck Electric Co.	Northern Ohio (C)	R. A. Wentz	Elyria
Savannah (L)	Sylvan M. Byck				
ILLINOIS			OKLAHOMA		
Chicago			Pawhuska	C. G. Sego	Pawhuska
Electrical Contractors' Association	J. W. Collins	160 No. LaSalle St.	OREGON		
Master Elec. Contractors' Association			Portland (C)	J. R. Tomlinson	51 Union Ave. N.
Decatur (C)	F. J. Boyle	304 S. Halsted St.	PENNSYLVANIA		
Granite City (C)	Earl Weatherford	114 East William St.	Altoona (C)	Walter Bracken	Leechburg
Peoria (C)	William W. Huxel	1418 Niedringhaus Ave.	Allegheny Valley	E. G. Jackson	12 West Third Street
Rockford (C)	L. B. Van Nuy	238 So. Jefferson St.	Du Bois (C)	C. E. Blakeslee	11th and French Sts.
Springfield (C)	Donald Johnson	106 North Second St.	Erie (C)	R. D. Goff	1605 N. Third Street
Wheaton (C)	A. D. Birnbaum	916 West Cook St.	Lehigh Valley (C)	A. W. Hill	Bethlehem
INDIANA			Philadelphia (C)	M. G. Sellers	1202 Locust Street
Lake County (C)	A. R. Irwin	3461 Mich'n Av., Ind. Har.	Pittsburgh (C)	Fred Rebele	1404 Commonwealth Bldg.
Indianapolis (L)	A. W. Cruge	2405 E. Tenth St.	Wilkes-Barre (L)	Ambrose Saricks	25 No. Main Street
Michigan City (C)	Walter A. Sassodeck	913 Franklin St.	RHODE ISLAND		
Muncie (C)	Harry McCullough	113 W. Howard St.	Providence (C)	H. E. Batman	36 Exchange Place
South Bend (C)	R. A. Frink	1338 Howard St.	SOUTH CAROLINA		
Terre Haute (C)	C. N. Chess	523 Ohio St.	Charleston (L)	J. P. Connolly	141 Meeting Street
IOWA			SOUTH DAKOTA		
Cedar Rapids (C)	H. E. Neff	94 First Ave., West	Sioux Falls	H. W. Claus	326 S. Phillips Ave.
Davenport (C)	Louis F. Cory	510 Brady St.	TENNESSEE		
Des Moines (C)	R. C. Trembath	Bankers' Trust Bldg.	Chattanooga (L)	P. W. Curtis	725 Walnut Street
Fort Dodge (C)	J. A. Paul	16 So. Twelfth St.	Knoxville (L)	Jerry G. Cason	303 West Church St.
Sioux City (C)	E. A. Arzt	211 Fifth St.	Memphis (L)	J. J. Brennan	12-16 So. Second St.
Waterloo (C)	R. A. Cole	Cole Bros. Elec. Co.	Nashville (C)	J. T. Shannon	c-o Electric Equip. Co.
KANSAS			TEXAS		
Salina (C)	C. G. Loomis	814 Cedar St.	Beaumont (C)	J. A. Solleder	Houston & Bolivar Sts.
Wichita (C)	P. W. Agrelius	Wichita	Dallas (C)	P. B. Seastrunk	2032 Commerce St.
KENTUCKY			Houston (C)	J. W. Read	715 Capitol Avenue
Lexington (C)	J. H. Brock	235 East Main St.	UTAH		
Louisville (C)	C. L. W. Daubert	921 South Third St.	Ogden	B. Kristofferson	2249 Washington Ave.
Paducah (L)	K. H. Knapp	c/o Paducah Electric Co.	Salt Lake City (C)	C. Louis Collins	215 Kearns Bldg.
LOUISIANA			VIRGINIA		
New Orleans (C)	I. G. Marks	406 Mar. Bk. Bldg.	Lynchburg (C)	J. L. Fennell	c-o Fennell & App
Shreveport (C)	R. L. Norton	620 Marshall St.	Norfolk (L)	A. W. Cornick	200 Plum St.
MARYLAND			Richmond (C)	E. M. Andrews	15 N. Twelfth Street
Baltimore (C)	A. P. Peterson	511 Cathedral St.	WASHINGTON		
MASSACHUSETTS			Seattle (L)	P. L. Hoadley	Seaboard Building
Lowell (C)	George A. Ryan	79 Middle St.	Spokane (C)	William Stack	W. 1121 Cleveland St.
Haverhill (C)	H. W. Porter	14 West St.	WEST VIRGINIA		
Malden (Medford, Everett and Melrose) (C)...	H. J. Walton	c/o Malden Electric Co.	Wheeling	Peter J. Erb	1414 Eoff St.
Springfield (C)	C. S. Foster	230 Dwight St.	WISCONSIN		
Worcester (L)	John W. Coghlín	259 Main St.	Green Bay (C)	V. E. Grebel	531 S. Broadway
MICHIGAN			Madison (C)	L. A. Ring	2017 Winnebago St.
Detroit (C)	N. J. Biddle	112 Madison Ave.	Milwaukee (C)	E. H. Herzberg	1604 Wells Street
Grand Rapids (C)	T. J. Haven	1118 Wealthy St., S. E.	Racine (C)	Joseph J. Small	1910 Linden Ave.
Kalamazoo	E. R. Hummel	1121 Seminary St.	CANADA		
Saginaw (C)	E. T. Eastman	209 Brewers Arcade	Montreal (C)	George C. L. Brassart	674 Girouard Ave.
MINNESOTA			Toronto (C)	M. McRay	24 Adelaide St., N. E.
Duluth (L)	Morris Braden	c-o Minn. Pow'r & Lt. Co.	Vancouver (C)	J. C. Reston	579 Howe St.
Minneapolis (C)	W. I. Gray	209 Globe Building	Winnipeg (C)	Fred Ball	300 Princess St.
MISSOURI					
Kansas City (C)	A. S. Morgan	4 E. Forty-third St.			
St. Louis					
Electragists' Ass'n (C)	W. F. Gerstner	120 No. Second St.			
Electric Employers' Association (C)	G. L. Gamp	Wainwright Bldg.			

(C) designates exclusively Contractor-Dealer organization.

(L) designates an Electrical League.

MARCH ACTIVITIES

Guaranteed Wiring for Cincinnati Homeowners

Blue Emblem Plan of Cincinnati Electric Club to Acquaint Public
With Quality in Wiring Workmanship and Materials, and in
Appliances and Radio

AT THE Home Beautiful Show in March the Cincinnati Electric Club launched its Blue Emblem Plan by showing Avalon—the first blue emblem home.

The Blue Emblem Plan of Cincinnati goes beyond all other plans in that it is not only a symbol of adequacy, but of quality as well, both the wiring and the appliances being included.

Not every contractor and dealer can use Blue Emblems—only members of the league who support the plan and whose workmanship and materials are consistent with the high standards of the club.

Radios, appliances and lighting fixtures are tested by the club's engineers and must meet certain requirements before they can be labeled with a Blue Emblem.

In presenting this plan to the public the club gives the gist of its story in the following paragraphs:

"To the home builder, therefore, the Blue Emblem is a guaranty of standard design, honest materials, and capable workmanship at a fair price. A Blue Emblem contractor will first lay out a wiring plan that is fundamentally sound and will permit the convenient use of electric service. The basis of his plans can be found in the model home, whose wiring plans were drawn by the Cincinnati Electric Club.

"The wiring materials are usually sealed in the walls of a home, and the home owner must rely on the integrity of the contractor. Blue Emblem dealers are pledged to use only standard material from reputable manufacturers. The sense of security that comes from originally good materials will increase as years of satisfactory service pass by.

"We know that cheap goods are usually the most expensive in the long

run. For that reason the leading dealers will not handle inferior appliances. Radios, appliances, and lighting fixtures are examined and carefully tested by the engineers of the Cincinnati Electric Club, and must meet the rigid requirements of the club before they can merit the Blue Emblem.

"With the adoption of the Blue Emblem plan it has become possible for the layman, building a home, or purchasing appliances, to be certain that he is receiving full value for his investment. The Blue Emblem on anything electrical is his guaranty."

Convention Delegates to be Entertained at Famous River-view Club

Arrangements have been completed by the St. Louis Electragist Convention Committee whereby the famous River-view Club, located along the Mississippi, will be open to those attending the convention the week of August 8 without charge. This includes not only golf, but the use of the large out-of-doors swimming pool as well. The ladies will be entertained at the club at a tea and bridge party.

The entertainment plans are going ahead rapidly and it begins to look as though the St. Louis reputation as convention entertainers will be eclipsed by this year's Electragist Convention.

It will not be possible to give complete committee personnel until the next issue, but the chairmen are as follows:

Opera Committee, George Corrao.
Transportation, Barney Frauenthal.
Style Show, Charles J. Sutter.
Publicity, Martin Wolf.
Golf Committee, Herman Spoehrer.
Ladies', F. A. Rick.
Ladies' Hostess, Mrs. C. J. Sutter.

Rochester Contractors Organize

The electrical contractors of Rochester have formed the Rochester Electrical Contractors' Association with Wallace Moore as acting secretary. Probably the most important work which the new organization will undertake in the beginning will be that relating to a proposed licensing ordinance. A license committee has been appointed and is now at work upon the subject gathering data on what has been done elsewhere.

Lighting Equipment Association Moves to New York

The Artistic Lighting Equipment Association has moved from Cleveland where it has been since its beginning and is now in New York City at 711 Graybar Building, 420 Lexington Avenue. G. P. Rogers is the managing director.

Fort Wayne Campaign Against Unapproved Appliances Halted

The campaign against sub-standard electrical devices and materials which Paul Thiele, electrical inspector for Fort Wayne, Ind., expected to inaugurate on March 1 under provisions of the local ordinance, has been halted. A protest was lodged by manufacturers of unapproved devices and at a meeting of the mayor, board of works, the electrical inspector and a representative committee of electrical appliance manufacturers and dealers it was agreed, according to a letter from the electrical inspector, that "this ordinance prohibiting the sale and use of unapproved appliances was unfair, drastic and hinted at as being unconstitutional and it was agreed that this ordinance shall be amended and that the sale of these articles shall be permitted to continue."

An amendment to the ordinance has been presented to the Fort Wayne council.

Clyde L. Chamblin Elected President Electragist Association

Southern Division Broken Up Into Two Divisions and A. E. I.
Position On All-Metal and Other Wiring Systems Clarified at
Annual Meeting of Executive Committee

AT THE annual spring meeting of the Executive Committee of the Association of Electragists, International, Clyde L. Chamblin of San Francisco, was elected president for a two-year term succeeding Joseph A. Fowler of Memphis.

The several committees of the association reported progress on their activities since the 1926 convention.

Because of the extent of territory covered by the present Southern Division it was voted to break this division up into two: Southeastern and southern. The former will comprise the states of Virginia, West Virginia, North Carolina, South Carolina, Georgia and Florida. The southern will comprise the states of Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Arkansas, Oklahoma and Texas. As the present Southern Division Executive Committeeman, Mr. Fowler, is from the new Southern Division, the new Southeastern Division will be entitled to elect an Executive Committeeman this fall to serve for two years.

Due to the continued misunderstandings of the policy of the Association with respect to all-metal and other wiring systems the Executive Committee prepared a statement which appears on this page. This statement is being given the widest publicity.

The committee discussed ways and means of promoting the rewiring of inadequately wired buildings. The discussion was introduced by a paper read by George Barrows, author of the Pittsburgh Barrows Plan for Rewiring Campaigns. It was generally agreed that the Red Seal Plan should be tried with any plan for rewiring.

In addition to electing Mr. Chamblin president, the following committee appointments were made:

G. E. Shepherd, Wilkes-Barre, re-appointed Committeeman-at-large, Wiring Methods and Legislation.

A. E. Bouckman, Membership and Publicity.

Joseph A. Fowler, Liability Insurance.

L. E. Mayer, Architects and Standardization.

A. Penn Denton, Code.

E. C. Headrick, Radio.

C. L. Chamblin, Conventions and Meetings and Red Seal.

R. A. L. Gray, International Relations.

J. H. Schumacker, Data Book and Cost Data.

W. Creighton Peet, Trade Policy.

J. F. Buchanan, Credit and Accounting.

Mr. Chamblin, who is the first A. E. I. president to come from beyond the Mississippi, is a native Californian, having been born there on March 17, 1884. He came up through the ranks, having served his time as apprentice and

journeyman. In 1912 he went to work for the company of which he is now president as superintendent and estimator and the following year together with T. H. McDonnell acquired all the stock of the company. Since 1916 Mr. Chamblin has been sole owner of this company.

On the Pacific Coast Mr. Chamblin is known for the time and energy he has given to association work. He is now president of the California Electragists and was at one time president of the old California State Association of Electrical Contractors and Dealers. He has been a member of the advisory board of the California Electrical Bureau for a number of years and at the time of his election to presidency of the San Francisco Electrical Development League was the first elec-

All-Metal and Other Wiring Systems Statement

IN VIEW of conditions at present obtaining in the industry and the impression that the Association of Electragists, International are by their work operating to hinder rather than develop its full possibilities it is desirable that a frank statement and announcement of policy, covering such matters as seem to constitute the basis of present differences, be made at this time.

The A. E. I. recognizes that any plan looking to the more full and complete use of electric service, or which serves to create a more rapid growth, must necessarily be of benefit to all branches of the industry and as such command their support. The extension of wiring systems is a prime factor in such a development and is of first interest to the electrical contractor. Nothing but the strongest reasons, therefore, could justify any plan or program which might seem to restrict or limit such growth or extension.

To prevent any misunderstanding of the position of the A. E. I. with respect to the various types of wiring methods, the Association desires to make the following statement: FIRST: The A. E. I. will unqualifiedly endorse any plan of any competent body having for its object the development of present uses of electricity, under whatever rules governing such installations as may at the time be recognized as competent.

SECOND: The A. E. I. recognizes all systems of wiring approved by the N. E. C. and have

never in any plans of the Association, either in the past or at present under consideration, taken any other position.

THIRD: The All-Metal standard of the A. E. I. has at no time been properly understood. This Association has never recommended nor intended that the standard should be taken to mean only rigid conduit. Rather has the term been intended to mean a metal covering or metal sheath over the conductors. The All-Metal standard does not mean the use of metal protected wiring everywhere. Undoubtedly the phrase "All-Metal" has been too embracing and has contributed to the present situation.

FOURTH: Believing that the Code specifies a minimum standard, and desiring to meet the needs of the public and the inspection departments for a better grade of work, the A. E. I. has sought by a metal standard and suggestions covering the use of the different Code materials in specific places, to meet this condition. There is no single standard of building construction and beyond the proper use of materials under the conditions to be met there are no restrictions on the work of the architect. It is undoubtedly true that a higher grade of wiring installations will continue to be required.

It is to meet such conditions that the Association of Electragists, International, are endeavoring to provide a medium extending beyond the Code.

trical contractor ever to hold that office. This year he completed a term as director of the Pacific Radio Trades Association.

Mr. Chamblin first took an active part in the work of the Association of Electragists when he was elected executive committeeman from the Pacific Coast in 1923. The next spring upon his return home from his first A. E. I. Executive Committee meeting he organized the California contractors around the Electragist program, forming the first state association of Electragists to be so organized.

During his years of service on the A. E. I. Executive Committee, Mr. Chamblin has headed up at different times the following committees: Engineers & Architects, Membership and Red Seal.

The keynote of all of Mr. Chamblin's Association work has been: "Get to know the other fellow and work with him." His ability thus to work with other branches of the industry has been remarkably successful and has been recognized. He was a recipient of an award of honorable mention at the first presentation of the McGraw award.

As a member for a number of years of the board of directors of the Society for Electrical Development and as the contractor member of the executive committee of the National Electric Light Association in 1923, Mr. Chamblin has secured a national viewpoint on industry problems and it is with this background and the desire to have all branches of the industry in mutual accord that he takes up the reins.

Rowley Heads Utah League in 1927

B. E. Rowley was elected president of the Electrical League of Utah, formerly the Rocky Mountain Electrical Cooperative League, at the annual election held in December. Other officers are R. M. Bleak, vice president, and Miles R. Cahoon, secretary and treasurer.

Planning Program for New York State Meeting

It is expected that four or five nationally-known figures in the electrical industry will appear on the program of the 1927 convention of the New York

State Association of Electrical Contractors and Dealers, according to the announcement of A. L. Bush, president. The convention, which will be the twenty-eighth annual meeting held by the association, will take place at the Hotel Syracuse, Syracuse, on June 13 and 14. A two-day program is scheduled, ending with a dinner and dance and including a number of entertainment features for the women visitors.

Clarke Appointed Pennsylvania Fieldman

Allan V. Clarke has become Pennsylvania state fieldman for both the Association of Electragists and the Pennsylvania State Association of Electrical Contractors and Dealers.

Mr. Clarke finished his education in the U. S. Naval Academy and is fully grounded in accounting and commercial law. During the past fourteen years he has, with the exception of three years



Allan V. Clarke

spent in the army, been in the electrical industry, having had contact with the manufacturer, the jobber and the contractor-dealer.

Mr. Clarke's present duties are that of a personal intensive service to members and prospective members of both the A. E. I. and the Pennsylvania State Association.

Poughkeepsie Pushes Estimating and Accounting Survey

Immediately following a meeting addressed by Arthur L. Abbott, technical director of the A. E. I., the Electrical League of Poughkeepsie, N. Y., appointed a committee to investigate

methods of improving wiring conditions in that territory. Two surveys were put under way, one involving an analysis of overhead expense and the other the collection of house wiring data. Forms for the presentation of this information were sent to all members and the forms were scheduled to be returned to the committee during the early part of March.

It is anticipated that with the cooperation of the contractor-dealers in Poughkeepsie a helpful job cost accounting system may be worked out, based on local conditions.

Goodwin, Nicholas and Morton Organize as Marketing Counsellors

Announcement is made of the organization of Goodwin, Nicholas & Morton, with offices at 522 Fifth Avenue, New York, to render service as marketing counsellor in the electrical and allied industries. The officers of the corporation are: President, William L. Goodwin; vice president and treasurer, Frederic Nicholas, and vice president and secretary, Walter H. Morton.

Goodwin, Nicholas & Morton the announcement states, are equipped to serve both individual clients and groups of clients in different branches of industry, either nationally or locally, in the solution of problems relating to the marketing of their products or service.

Mr. Goodwin retired recently from The Society for Electrical Development after six years as its operating vice president. Through his long experience as a jobber on the Pacific Coast and his varied activities in other fields, he has had intimate contact with the marketing problems of industry for many years and is nationally known for his constructive work.

Mr. Nicholas was formerly general secretary of the Associated Manufacturers of Electrical Supplies and executive secretary of the Electrical Manufacturers Council. He was executive secretary of the National Electrical Manufacturers Association during the period of organization of that association.

Mr. Morton, who recently sold his interest in the Sanborn Electric Company of Indianapolis, of which he had been treasurer for the past five years, has had a wide experience in both the retail electrical and contracting field and in

organization work. He was one of the organizers, and for many years manager-secretary of the National Association of Electrical Contractors & Dealers, now The Association of Electragists, International, and served as secretary of The National Knit Goods Manufacturers Association, the Porto Rico Fruit Exchange, the Utica Park Board, and the Employers' Association of Utica, New York.

California Electragists Working With Architects

Efforts are being made by the California Electragists through joint meetings with architects and engineers to decrease duplication of effort in handling electrical construction work. Work will start soon on the standardization of building specifications and electrical layout. It is stated that every co-operative means possible will be used "to reduce specifications to the simplest, clearest and most unmistakable terms."

San Francisco Officers in Second Term

The same set of officers who presided over the affairs of the San Francisco Association of Electrical Contractors and Dealers during 1926 will serve during 1927, according to the result of the election held recently. The officers are: Charles Shipman, Atlas Electric Company, president; S. Radelfinger, Radelfinger Brothers, vice president, and Vic Lemoge and Edward Martin, Sterling Electric Company, as members of the executive committee.

Favorable Outlook for 1927 Fan Sales

Though 1927 has been predicted to be another summerless summer by a well-known long-range weather forecaster, the summer is expected nevertheless to be a favorable one for electric fan sales. This is the opinion of the General Electric Company and is based on the data gathered by the research section of the merchandise department of the company.

"Experience has taught the General Electric Company," says the statement, "that the average temperature for the summer has no bearing on fan sales; four or more consecutive days of ex-

tremely high temperature constitute 'good fan weather.' It would make no difference if the summer's average were even 10 degrees below normal. It is the repetition of a few days of 'unbearable' weather which drives people into stores for fans. If this series of hot days were preceded by a period of unseasonable cold weather the high temperature would be even more noticeable and it is logical to conclude that fan sales would be increased by the contrast."

Caldwell Appointed to Radio Board

O. H. Caldwell, well known as an editor of various electrical magazines during the past twenty years, has been appointed a member of the radio commission formed during March by President Coolidge. Mr. Caldwell is at present editor of "Radio Retailing."

Procedure of National Electrical Code Interpretations Board

THOSE desiring an interpretation shall supply the chairman with five identical copies of a statement in which shall appear specific reference to a single problem, paragraph, or section. Such a statement shall be on the business stationery of the enquirer and shall be duly signed.

It is expected that when queries involve actual situations they will so state and that all parties concerned will be named.

Two general forms of findings will be recognized:

- (A) Those making an interpretation of the literal text;
- (B) Those making an interpretation of the intent of the Electrical Committee when a particular rule was adopted.

The findings of the Interpretations Committee will be in its name and for the Electrical Committee as a whole.

The party seeking the inquiry will be informed of the finding promptly, following its having been determined.

The chairman of this board is

A. R. SMALL
109 Leonard Street
New York, N. Y.

Detroit Has Permanent Electrical Exhibit

A permanent electrical exhibit along purely educational lines is one of the latest activities of the Electrical Extension Bureau of Detroit, the Detroit Edison Company and a number of manufacturers who are exhibiting there. It is located in the Michigan Theatre Building on Bagley Avenue and includes not only domestic electrical appliances, but also an exposition of good wiring and proper lighting. One of the exhibits is an illuminated wiring chart showing the proper number and location of outlets for an adequately wired home, together with some of the latest wiring materials for residence work.

The primary object of the exhibit is to familiarize the public with what may be accomplished through the complete and proper use of electricity. Nothing is sold on the premises of the exhibit

and no effort is made to commercialize the displays there.

Franklin Lighting Specifications

As a companion effort to the Red Seal Plan the Electric Association of Chicago has developed the Franklin Specifications for Productive Lighting. The specifications include a recommended range of foot-candles for a



large list of occupancies, notes on conditions which might involve some modification of recommended intensities and data on spacing and hanging heights for different types of commercial and industrial units to give desired illumination with different sizes of lamps.

The specifications were advanced as a very practical way of handling a technical matter by architects and others who are not grounded in illuminating engineering.

Every building in which the lighting is laid out in accordance with the recommended practice may receive a Franklin Specification Design Certificate and an emblem. Posters as in Red Seal work are displayed on the premises during the construction of the job, a decalcomania is applied to the service entrance and a certificate awarded the building upon completion and inspection.

N. Y. Merchandise Group Elections

At a joint meeting of the Independent Associated Electrical Contractor-

Dealers of Greater New York and the Merchandise Group of the New York Electrical Board of Trade, A. L. Bush was elected chairman of the merchandise group for the year and Louis Freund was elected vice chairman. Harry Hanft and A. L. Bush were elected to serve as representatives to the Board of Governors from the Merchandise Group. John Wilhelm was elected chairman of the fan committee of the Merchandise Group and Louis Freund and Jack Bander were appointed to the committee.

Charlottesville to Have New Code

A new electrical code for Charlottesville, Va., is now under consideration by a board comprised of the municipal commissioner, the municipal inspector, and representatives of the contractors, the engineers and the journeymen.

N. E. M. A. Creates Range and Water Heater Section

The National Electrical Manufacturers' Association has authorized the creation of a new section, to be known as the range and water heating section.

It is the aim of the association to have all manufacturers of electric ranges in the United States become members of this section. Its purpose is the cooperative solution of manufacturers' merchandising problems and, to this end, it will work with a similar committee of the National Electric Light Association.

M. C. Morrow, assistant sales manager of the merchandising department of the Westinghouse Electric and Manufacturing Company, has been elected chairman of the manufacturers' committee.

New Roster of Officers for Colorado League

Presiding over the destinies of the Electrical League of Colorado during 1927 will be the following newly-elected officers: F. F. McCammon, chairman; J. A. Guscott, F. H. Herzberger, R. G. Gentry and J. W. Ryall, vice chairmen; E. C. Headrick, secretary; Dean D. Clark, treasurer; O. L. Mackell, K. L. Francis, D. D. Sturgeon, B. J. Rowan, F. L. Easton, C. L. Newell, O. P. Willoughby and John J. Cooper, members of the advisory board.

Scott Brothers, Denver Electragists, Open One of Colorado's Finest Electrical Stores



ABOVE is shown the new store of the Scott Brothers Electric Company, Denver. The addition of a considerable amount of space to the old establishment, due to increasing business, has made the store one of the finest in

Colorado and one of which the partners—E. A. Scott on the left and G. L. Scott on the right—can rightfully be proud. It will be noted that the name "Electragists" is prominently displayed on both windows.

N. Y. Contractors' Play a Widespread Hit

The play, "The Same Old Story," as presented recently by the New York Electrical Contractors' Association, No. 1, and reprinted in the February issue of THE ELECTRAGIST, already has a record on "The Road," of which many Broadway hits would be proud. It has been played by contractors' associations in two cities and letters have been received from several other communities praising the idea of the play.

The skit deals with the tribulations of three contractors who are so anxious to land wiring contracts that they bid each other down to ridiculous figures and hand over all the profit on the job to the general contractor. It is written in humorous style, but with a moral derived from experience that is driven home in every line.

It was played before a contractors'

meeting in Chicago and was also given during February by the Electric Club of Fort Worth, Tex.

News Notes Concerning Contractor-Dealers

Rich & McHugh, Inc., of Okanogan, Wash., have opened a branch store at Pateris, Wash., which will be in charge of Earl Cole and Ray Ditton.

Clarence Johnson has moved his business from 316 Warren Street to City Hall Square, Hudson, N. Y.

A new electrical store has been opened at Ogdensburg, N. Y., by H. A. Foster.

The Lawrence Electrical Company has moved to 84 South Twelfth Street, Wheeling, W. Va.

Fillmore, Utah, now has a new electrical store under the direction of Harrison Anderson.

J. T. Ogden has withdrawn from the firm of Ogden & Westhaver, 728 Salem Street, Maplewood, Mass.

The W. D. Blunt Company has moved to the corner of Pierce Street and Billings Road, Quincy, Mass.

The new store of the Gilbert Electric Company, 286 West Santa Clara Avenue, San Jose, Cal., was opened to the public on February 5. The store is located in a new building erected especially to house it.

An electric service and repair shop has been opened at 31 Pratt Street, Meriden, Conn., by Charles Berndt.

L. W. Friedel, proprietor of the Friedel Electric Shop, Burlington, Ia., has moved his business to 18 Jefferson Street in that city.

The Bethlehem Electric Construction and Supply Company has moved into its new quarters at 74 West Broad Street, Allentown, Pa.

The formation of a new electrical contracting firm to operate in and around South Rockford, Ill., has been announced by W. J. Scattergood and Edward Gunning. It will be located at 1106 South Main Street.

The Durham Electric Company is a new electrical firm in Kingsville, Tex.

William H. Griffin, manager of the Lambert-Grisham Electrical Company, has announced the removal of the company's business to 412-14 Frederica Street, Owensboro, Ky.

The O'Hara Electrical Contracting Company, Chicago, Ill., has opened two new branches, one at 8 South Karlov Avenue and the other at 10 South Keeler Avenue.

Edward Duffy has established an electrical business at Medford, Mass.

New Electragists

The following contractor-dealers have made application and been accepted into the A. E. I. since the publication of the last list in the March issue:

GEORGIA		OHIO	
Columbus:	Raymond B. McCann Starr Elec. Co., Inc. The Tuohey Co.	Barberton:	Jacob Elec. Co.
LEVY-MORTON CO.		Painesville:	Hulburt Elec. Co. The Lake County Elec. Co.
ILLINOIS			
Moline:	MICHIGAN		
C. O. Hammerquist	Detroit:		
	Brown Elec. Co. Hub Elec. Co.		
INDIANA	Flint:		
Hartford City:	Schagane Elec. Constr. Co.	Shelby:	Citizens Elec. Co.
Wilbur Feighner		Steubenville:	Tri-State Elec. Co.
Indianapolis:	Jackson:	Willoughby:	Lamb's Elec. Store Plains Electric
Schwartz Elec. Service	Chapel Elec. Co.		
IOWA	Pontiac:		
Des Moines:	Durkee Electric E. R. Newell Pontiac Elec. Armature Wks., Inc.		
Beymer & Co. Furlong Elec. Co.			
MARYLAND		RHODE ISLAND	
Baltimore:	NEBRASKA	Pawtucket:	Eastern Elec. Engrg. Co.
H. E. Crook Co., Inc. Newton E. Spiess	Norfolk:	Providence:	Atlas Elec. Co. Frank Alford Broadway Elec. Shop. The Electric Service Shops Gray's Elec. Eng. & Constr. Co.
MASSACHUSETTS	NEW JERSEY		
Boston:	Passaic:		
Thos. W. Byrne Co.	Mars Elec. Co., Inc.		
Clinton:	Paterson:		
Wm. F. O'Toole Elec. Co.	Murdock & Miller Co.		
Springfield:	NORTH CAROLINA		
Forest Park Elec. Co. Interstate Elec. Co.	Wilmington:	Woonsocket:	Champagne Elec. Shop
	Electric Maintenance Co.		

News of the Manufacturers

Condulets

The Crouse-Hinds Company, Syracuse, N. Y., has issued its Catalogue No. 2100, illustrated and listing a new line of "Obround" condulets. The condulets have the "wedge-nut" fastener feature, by which the cover or wiring device is held securely and loosening by vibration is eliminated. The devices have unobstructed cover openings to facilitate the pulling of conductors and there are no screws projecting inwardly to injure the conductors. Installation of covers and wiring devices in difficult places is made easier by the fact that they can be turned so as to bring the fastening screws into an accessible position and the covers and wiring devices are complete units so that no parts can be lost during installation.

Radio Convenience Outlet

A new line of radio convenience outlets is being marketed by Yaxley Manufacturing Company, 9 South Clinton Street, Chicago. These devices are made in three single styles—for speaker, for antenna and ground, and for battery connections and are furnished in



gang combinations of all three single types. Another loud speaker outlet is made for use where many loud speakers are to operate on the same circuit at the same time. This is accomplished through use of an impedance coil wound to 2,200 ohms, which is equivalent to the resistance in the average loud speaker. In this way equal volume is possible for one or several loud speaker units. All styles are brushed brass plate, flush type receptacle and are complete with screw terminals and radio jacks. Outlet for battery connections is furnished complete with pin plug to take wires from set and is of Bakelite construction. All outlets fit standard switch box.

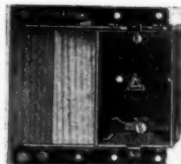
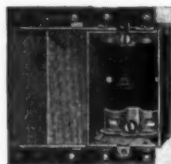
Hotel Type Fan

A hotel type fan is a new product of the Hunter Fan and Motor Company, Fulton, N.

Y. This fan is equipped with a shade holder built on under the fan, the holder not only acting as an oil well for lubricating purposes, but also carrying a light socket and supporting the shade. By building this as an integral unit with the fan instead of attached to the holder as was formerly done, the electrical and mechanical vibration has been so reduced that lamps used on this type of fan are said to last just as long as in ordinary fixtures.

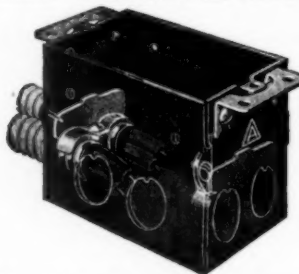
Switch Boxes

Nos. 77-EE and 77-FEE switch boxes with knockouts and clamps for armored cables are now furnished with new type extended ears by the Appleton Electric Company, 1701 Wellington Avenue, Chicago, Ill. These extended ears are stamped from heavy steel and are attached to the body of the box with screws. Elongated slots permit of various adjustments



to take care of the variation in thickness of plaster. These ears have pointed projections for gauging and bracing the box and are furnished with convenient nail holes making for easy installation. These boxes are furnished with regular clamps and also with flanged clamps to close up any opening in the knockout around cables as shown in illustration.

The No. 77-F box has the same construction as all Appleton sectional switch boxes and assembly is made quickly by means of a screw driver. These boxes are furnished with



reversible ears having adjustment to take care of any variation in the thickness of plaster. The flanged clamps furnished in this box completely close up the knockout around the cable, a feature now required throughout the country by many local electrical inspectors. These boxes are for use with armored cable, non-metallic sheathed cable and flexible tubing.

Duplex Laundry Box

A new "Raco" duplex laundry box is now in production by the Roach-Appleton Manufacturing Company, Chicago. It is designed for use in apartment building basements where the light in the laundry is carried on tenants' meters instead of building meters.

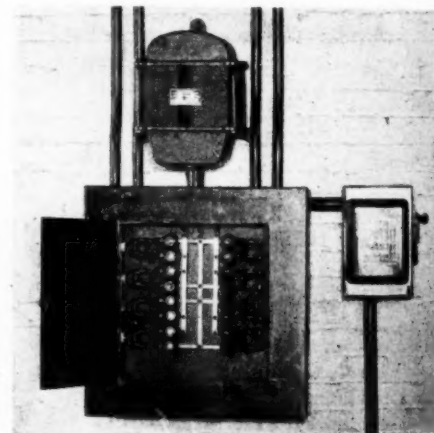
This type of box will take care of plug contact from the light as well as plug contact from the washing machine at the same time,



both receptacles meeting all requirements as to polarity. The plate carrying the receptacle may be removed for wiring by taking out one screw. The box is provided with a cover and has to be locked with padlocks provided by the tenants.

Air-Cooled Transformers

The Sorgel Electric Company, 91 West Water Street, Milwaukee, has recently improved its line of air-cooled transformers and has increased the range of sizes up to and including 50 kva. The transformers are provided with conduit nipples attached directly



to the transformer so that it is merely necessary to enter the conduit into the distribution cabinet or junction box and fasten it with an ordinary locknut and bushing. The principal application of these transformers is industrial lighting.

Heater Receptacle

The Arrow Electric Company, Hartford, Conn., has announced a new type of "Arrow" receptacles for glow heaters and heating appliances. It has a porcelain back, which unscrews and has a hole for lead in wire. It can be supplied glazed or unglazed to take a spray finish if exposed to view. It completely houses the terminals. The depth back of ring is 1 3/4 in. and sufficient room is provided for knotting cord.

Bulletin No. 7, recently announced by the Trumbull Electric Manufacturing Company, Plainville, Conn., supersedes all former listing of safety switches and panelboards.

MAJOR Floodlights

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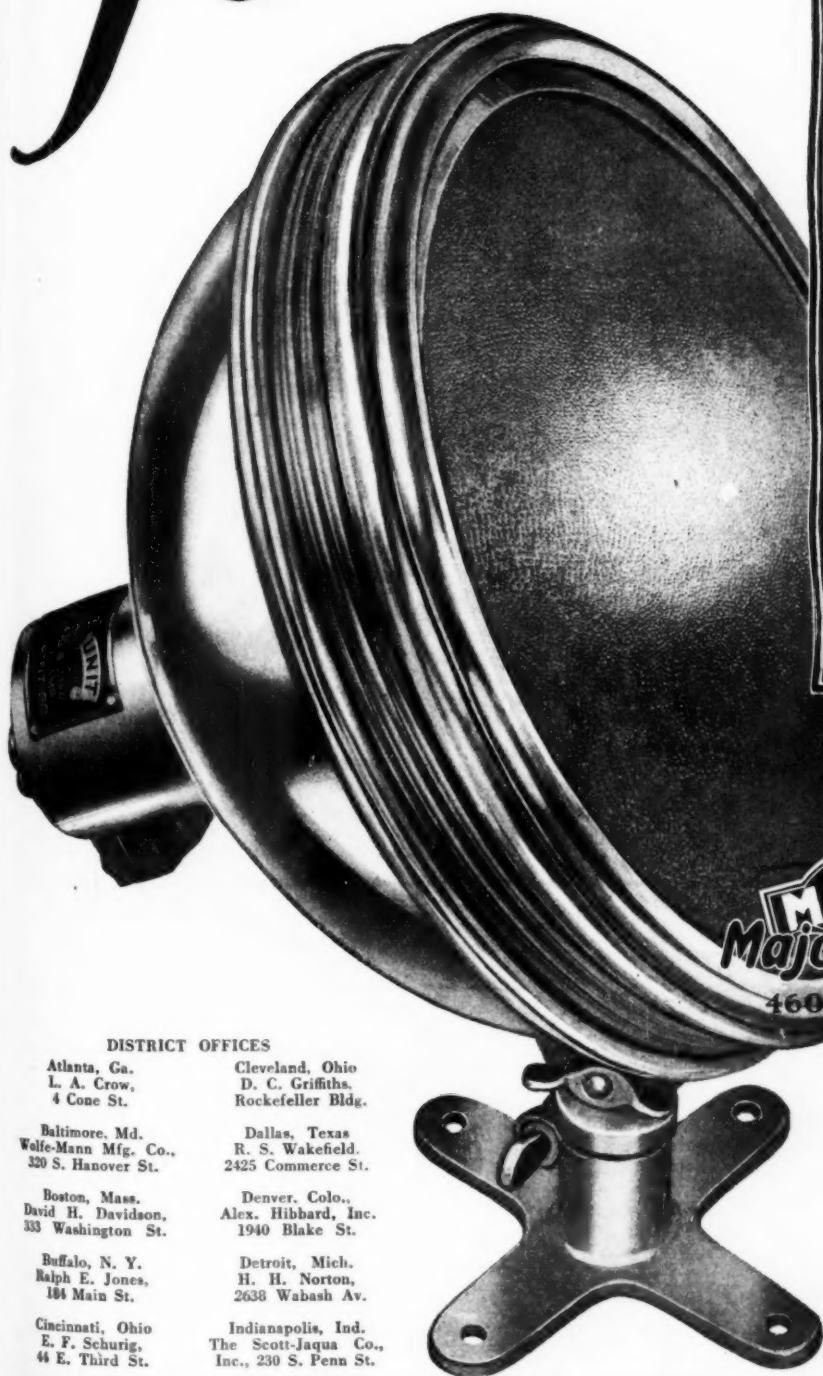
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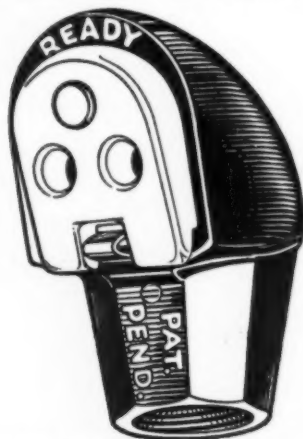
Mid-West Products

The "Peerless" outlet hanger, type A, for old work, has been on the market before, but only recently the Mid-West Metal Products Company of Muncie, Ind., were licensed to manufacture it. It is designed for a specific purpose, the folding construction assuring easy installation and permitting the use of



hanger in a hole as small as $1\frac{1}{2}$ inches in diameter. The new toggle bolt construction also makes the type A hanger self-aligning and insures straightly hung fixtures. This unit can be used with any standard outlet pan or box.

Another Mid-West device is the "Ready Service Head," which it is claimed has many features which make it an improvement over



many of the old style heads. It has a one-piece, malleable iron body with glazed porcelain cap, and is easily attached to the conduit pipe. The spring clamp takes the place of screws and cotter pins. The flange on the cap fits under head, rests cap and prevents moisture entering unit. Economy in installation is claimed as a first saving.

Service Wiring Devices

The Wadsworth Electric Manufacturing Company, Covington, Ky., has issued Catalogue No. 40 and Supplements No. 13 and No. 14, covering three new lines of the company. The first deals with branch circuit fuse cabinets for flush and surface mounting. They are of single fuse, dead front construction, arranged for 2- or 3-wire. The dead front may be easily removed and the trim and dead-front are separate. This is said to mean that when roughing in the cabinet with the dead front may be installed complete, but without the trim. When the job is ready for the trim it may be mounted on the ears of the cabinet with the trim mounting screws. The dead front is arranged with insulated

test holes so each circuit can be tested without removing the dead front.

Supplement No. 13 covers sealed service fuse switches, with visible blades and porcelain base, for direct current and single phase service. They are of the meter test type and are equipped with test links. The switches are designed to take the knockout end walls, shutter type end walls and meter trims of other manufacturers. There is a similar line for polyphase service.

Supplement No. 14 covers 30-amp. 125-v. 2- and 3-pole plug fuse type entrance switches of the sealed fuse type.

Oscillating Fans

The Emerson Electric Manufacturing Company, St. Louis, has made an improvement on its line of oscillating fans by placing a removable metal cap with insulating bushing back of the motor housing. This permits the field leads to be drawn out and reconnected in the event of breakage. On removing the metal cap with bushing there is found an ample supply of lead wire which can be drawn out for making the connection.

Radio Switches

The Trumbull Electric Manufacturing Company, Plainville, Conn., is now manufacturing a new line of radio switches, designed to stand up under severe use and at the same time to take up a minimum amount of space. Connections may be made from either front or rear, while the contact screws are placed in the switch posts in order to make the wiring as easy as possible. Four projecting corner points on each post hold the connecting wires in position after they have been fastened under the binding screws. Also supplied is a line of back connected radio switches for panel mounting. These are nickel plated to be in keeping with other radio fixtures. There is also a radio insulator of brown glazed porcelain.

Manufacturing Notes

Edwards & Co. has opened its own branch office at 176 Federal Street, Boston, under the management of J. T. Gorman. The opening of another branch office was announced for March, this to be at 626 Land Title Building, Philadelphia, under the management of R. H. Andrews.

Frank Adam Electric Company, St. Louis, Mo., is distributing Catalog No. 40 on panelboards and steel cabinets, together with Discount Sheet No. 44 dated April 1.

The Powerlet line of rigid conduit fittings, formerly manufactured by the Multi Electrical Manufacturing Company, has been purchased by the Chicago Fuse Manufacturing Company of Chicago, Ill., and hereafter will be known as Gem Powerlet Conduit Fittings. A new catalog will be ready for distribution very soon.

Multi Electrical Manufacturing Company will still manufacture Multi porcelain bushings, slate and porcelain cartridge fuse cut-outs, terminal lugs, fuse clips and the Newgard line of weatherproof receptacles. The company states that it is developing other lines in the wiring supply field which will be announced later.

The Mutual Electric and Machine Com-

pany, Detroit, after having carried the trademark, "Bulldog," on its products for many years, has decided to change the name of the company to the Bulldog Electric Products Company, so that the company and its products could be more closely associated in the minds of the public and the trade. There will be no change in the management of the company.

The Square D Company, Detroit, is building an addition to its main plant in that city. The addition will enlarge the available floor space by fifteen percent and will provide much-needed production facilities. Plans are also under way to double the size of the company's present plant at Peru, Ind.

A book on "Show Window Lighting," suitable for distribution to window lighting prospects, has been issued by the Pittsburgh Reflector Company, Pittsburgh. It explains various methods of window lighting and cites results which have been obtained by proper illumination of windows.

Samuel P. Williams, secretary of the Hart & Hegeman Manufacturing Company, Hartford, Conn., for the last five years, was elected president and treasurer of the company at the annual meeting of the board of directors. Mr. Williams succeeds the late Shiras Morris. The new president of the company has been associated with the organization for eight and one-half years.

The Chicago Fuse Manufacturing Company, Chicago, has recently brought out a new counter display case for their "Union Auto Fuses." It is designed to present the advisability of carrying extra fuses and to make



easy the selection of the proper type and size. It presents to view through the glass cover a full assortment of fuses, packed in metal boxes of five with the type and size indicated on each.

The complete line of "Constant Duty Reelites," manufactured by the Appleton Electric Company, Chicago, is described, illustrated and listed in Bulletin No. 501, recently issued by the company.

P. A. Powers, until recently advertising manager of the Benjamin Electric Manufacturing Company, Chicago, has been appointed sales manager of the refrigerator division of the company. R. W. Staud has been appointed advertising manager.

A "Beardslee Beverley Lights" catalogue, describing and illustrating the complete line of fixtures manufactured by the organization recently taken over by the Beardslee Chandelier Company, is now being distributed.

The Arrow Electric Company, Hartford, Conn., has issued its Catalogue No. 22, listing its line of wiring devices.